NETWORK WORLD
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NET MANAGEMENT

MAXM tool to take on extra duty

BY MICHAEL COONEY

Vienna, Va.

MAXM Systems Corp., developer of the MAXM management platform used in some of the largest corporate networks, is readying enhancements that will expand the scope of the product and make it easier to use.

By the end of the year, the company will add support for manager-to-manager communications, greater numbers of users, a new trouble-ticket application and other enhancements that promise to give net managers a more open and scalable management platform, executives said.

MAXM, used by firms such as J.P. Morgan and Fidelity Investments, is an integrated voice/data management system that runs on IBM RISC System/6000 servers. The server can receive alerts and alarms from element management systems distributed throughout an enterprise and automatically respond to those events by employing user-defined automation scripts.

"We want to scale up our platform so users can manage [all] the distributed components in their networks," said Ronald Hardy, director of marketing for MAXM.

In that vein, Hardy said MAXM will be enhanced to support manager-to-

See MAXM, *page 59*

Maxing out MAXM

Planned enhancements for the management system include:

- AIX-based operator workstations
- Support for multiple networks
- Support for additional users
- Improved filtering for concentrators

Users wonder where the 'Highway' is leading

BY ELLEN MESSMER AND DAVID ROHDE

Washington, D.C.

Say "Information Superhighway" and data network manager Ted Sickles of Rockwell International Corp. pictures sending product specs and component drawings to customers or bidders on demand.

Agway, Inc.'s telecom director Larry Gessini envisions gaining access to interactive market research, and Bryan Paxson, communications manager at Freightliner Corp., dreams of truckers being able to get information from anywhere in the country on their personal digital assistants.

INFORMATION SUPER HIGHWAY

But none of these corporate network executives are sure the attention or the money the Clinton administration is lavishing on the National Information Infrastructure (NII) — the formal name for the Information Superhighway project — will result in network services that meet their needs.

According to the administration's policy paper, "The National Information Infrastructure: Agenda for Action," the government stands ready to change telecommunications laws, mandate standards and spend more than $1 billion per year to ensure the U.S. has a high-capacity "seamless web" of wireless and wire-line communications.

While business leaders say the Information Superhighway concept is laudable — and plausible — some believe the debate has focused too much on education and hospitals and not enough on business needs.

"Business efficiency is the primary reason to build the NII," said Eric Benhamou, president of 3Com Corp. and chairmain of the American Electronics Association's NII Task Force, which recently unveiled a survey of 400 AEA members' opinions on the subject.

"The survey advises us it's time to press the reset button on the current set of expectations about the NII," Benhamou said. According to the survey, the manufacturing, banking and retail industries should be given at least as

See Info Highway, *page 59*

CrossComm eyes Proteon buyout

Router maker close to finalizing deal for Proteon's internetworking unit.

BY SKIP MACASKILL

Marlborough, Mass.

CrossComm Corp. is on the verge of acquiring the internetworking division — and possibly the hub business — of rival router vendor Proteon, Inc., according to several industry sources.

The two companies have apparently come to terms on an agreement under which CrossComm would get all of Proteon's routing technology and products by purchasing a big block of stock in the struggling company. Sources also indicated that some parts of Proteon's hub business may be included in the deal.

"This agreement is nearly a done deal," said one source close to CrossComm. "It has not been finalized since [Securities and Exchange Commission] and shareholder approvals are still

See CrossComm, *page 58*

CrossComm's 6-month plan

- Roll out ATM switch module and interface for its high-end router.
- Unveil branch office routers.
- Announce Ethernet LAN switch.
- Introduce a WAN monitor application.

See story, page 58

HIGH-SPEED NETWORKING

Internet group plans to outsource U.S. backbone

BY ELLEN MESSMER

Washington, D.C.

In an abrupt about-face, eight regional Internet networks last week issued a request for proposal aimed at selecting a TCP/IP service provider to supply the T-3 Internet backbone that will interconnect them.

The Internet purchasing consortium, called the Corporation for Regional and Enterprise Networking (CoREN), last year announced plans to build and operate its own network because federal subsidies that pay for the current Internet backbone are scheduled to taper off. But this month, the group switched gears and opted to buy routed Transmission Control Protocol/Internet Protocol service instead, convinced that high-speed TCP/IP service is becoming a commodity.

The move will help CoREN support an influx of new commercial Internet users and may spur corporate users to consider the TCP/IP service provider option for their own networks.

CoREN's members — CICNet, NEARNet, BARRNet, NorthWestNet, NYSERNet, SURANet, WestNet and MIDNet — want to find a TCP/IP and Connectionless Network Protocol (CLNP) service provider ready to offer T-3 access and backbone service for a maximum of 12 cities by October, with speeds rising to 155M bit/sec within four years.

See CoREN, *page 58*

NEWSPAPER

ATM a lifesaver for UVA medical center

BY CARYN GILLOOLY

Charlottesville, Va.

For the Department of Neurosurgery at the University of Virginia's (UVA) Health Sciences Center, bandwidth can literally be a matter of life and death.

With that in mind, the department is looking to start using Asynchronous Transfer Mode (ATM) this spring to provide the capacity needed to support real-time, full-motion video and other heavy-duty applications that could help health care workers save lives.

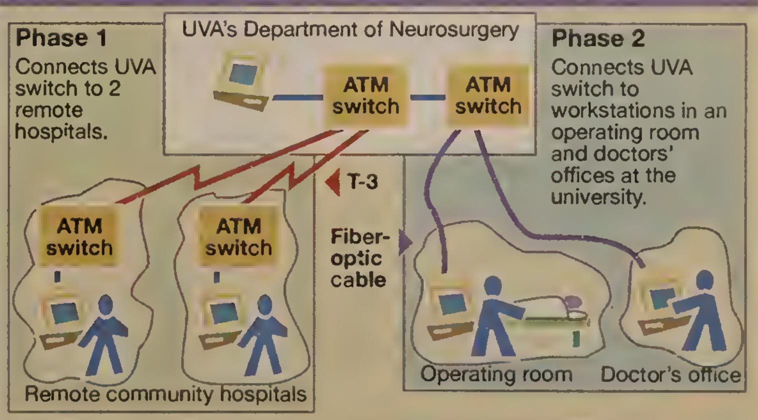
The department's first ATM-based applications will let resident specialists at UVA assist doctors at nearby health care facilities without requiring doctors or patients to travel between sites.

And within 30 to 60 days, the neurosurgery department will launch a project to let surgeons consult on operations at UVA from their offices or homes via ATM-based video links.

"ATM hasn't been 100%

See UVA, *page 59*

ATM: What the doctor ordered


Phase 1
Connects UVA switch to 2 remote hospitals.
UVA's Department of Neurosurgery
ATM switch
ATM switch
Phase 2
Connects UVA switch to workstations in an operating room and doctors' offices at the university.
T-3
ATM switch
ATM switch
Fiber-optic cable
Remote community hospitals
Operating room
Doctor's office

The network will let physicians run graphics- and video-based telemedicine applications.

SOURCE: UVA'S DEPARTMENT OF NEUROSURGERY, CHARLOTTESVILLE, VA.
GRAPHIC BY SUSAN J. CHAMPENY

Briefs

Sprint readying SONET upgrade. Sprint Corp. is expected to announce today a schedule to deploy Synchronous Optical Network transport technology across its net. The upgrade will improve the network's reliability, among other things, the carrier said. Further details were not available.

Study up on the Internet. The Internet is becoming serious business. To help you and your company make the most of the Internet, *Network World* this week kicks off a new series of one-day seminars titled Doing Business on the Internet. The courses will be conducted by consultant and *NW* columnist Mark Gibbs in 11 cities. For more information about the seminars, call (800) 643-4668.

Separately, *NW* next week will publish the first in a continuing series of stories about how to do business on the Internet. The first article will focus on cultural issues.

Yours, mine and OURS. The Open User Recommended Solutions (OURS) group this week will hold its Spring Conference in Bellevue, Wash., where several task force progress reports will be presented. Presentations will include: a revamped lexicon that provides standard definitions for a variety of software licensing terms; initial findings on how vendors can help users with some key management concerns, including more flexible event systems, automated software distribution, and more robust directory and authentication services; a status report on how single logon work relates to data security; and definitions as to what qualities typical electronic mail products should have.

Clipper compromised? "Security Insider Report," a monthly newsletter published in Seminole, Fla., has reported that government officials are seeking to determine whether former CIA employee and alleged traitor Aldrich Ames may have sold information to the Russians about the government's secret key-escrow technology used in Clipper Chip chipsets and Capstone Tessera cards. The secret key-escrow technology, dubbed Skipjack, can be used to encrypt network voice and data.

AnyLAN, anytime, anywhere. Don't look now, but get ready for the high-speed Ethernet and token-ring campaign. Backers of the 100VG-AnyLAN 100M bit/sec network standard this week will announce that they have formed a vendor-independent forum to promote the technology.

The 100VG-AnyLAN Forum will disseminate information to users, resellers and others; support multivendor application development; and coordinate interoperability testing at the University of New Hampshire. Charter members include AT&T Microelectronics, Hewlett-Packard Co., IBM, Optical Data Systems, Inc., Proteon, Inc. and Ungermann-Bass, Inc.

CMIP and SNMP unite. This could be the start of a beautiful relationship. The Network Management Forum last week announced availability of specifications designed to enable management systems supporting the Simple Network Management Protocol and Common Management Information Protocol to interoperate. NetLabs, Inc. and Groupe Bull SA have already implemented these specifications in products, the forum said.

NETing a CEO. Network Equipment Technologies, Inc. (NET) last week ended its search for a chief executive officer and president by naming former Amdahl Corp. Vice President Joseph Francesconi to the post. He succeeds Daniel Warmenhoven, who resigned as NET chairman and CEO last fall. Acting CEO John Arnold was named chairman.

Contacts

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Network HELP desk

Network World *tracks down answers to your questions regarding products, services, technologies or disputes with vendors. Please submit questions to Dana Thorat at (800) 622-1108, via fax at (508) 820-3467, via the Internet at djt@world.std.com or via CompuServe at 73244,2673.*

Our company has a 4M bit/sec Novell, Inc. NetWare token-ring network, and most of the nodes are laptops with token-ring cards. There are times when some of the users take their laptops to a remote site, where they need to share files and a common printer. Are there any shareware packages that will allow the laptops to use the token-ring cards in a peer-to-peer network when they all leave the office?

Bill Fink, St. Louis

Ronald Nutter, director of technical services at 900 Support, a 24-hour, seven-day-per-week NetWare technical support company in Lake Oswego, Ore., replies:

I am not aware of any shareware or public domain products that will make use of your token-ring PCMCIA cards. (The Network Help Desk would appreciate any assistance from readers who can identify shareware that addresses these needs. Please call Dana Thorat at (508) 820-7451 or send E-mail to djt@world.std.com.)

The next best option might be to consider Novell's Personal NetWare product, which allows users to share files and printers with a NetWare user interface in which they are accustomed. Personal NetWare also lets you use your existing hardware; you would only need to purchase cables and a token-ring multi-station access unit (MAU), which can cost as little as $250 for a reconditioned MAU. Personal NetWare costs $99 per station and $395 for the five-user version. For more information on the product, call (800) 638-9273.

What is the maximum length of coaxial cable that you can use in a local-area network?

Alex Dalton, Manhattan, Kan.

William Welch, a technical support represen-

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Newbridge ATM

YOUR REAL WORLD COMPETITIVE EDGE

Fact: ATM is the only technology that works seamlessly across the enterprise, from desktop to the wide area network. It is ideal for public, private and hybrid networks, from the local area to true global connectivity.

Fact: ATM is ideal for a wide variety of applications that exist today, and for the applications of tomorrow.

Fact: Newbridge® ATM provides an evolutionary path. Our seamlessly integrated designs will improve your network's productivity immediately without replacing existing equipment.

Fact: Newbridge ATM is proven. Our ATM equipment is carrying live traffic today in a wide variety of networks and is being used by a tremendous range of organizations who have a real world competitive edge in their respective market segments.

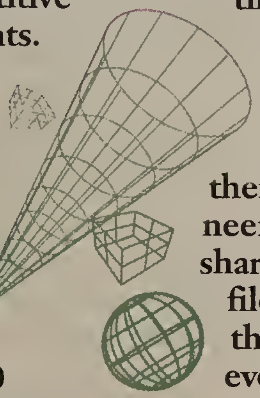
Newbridge is the undisputed leader in the ATM marketplace.

Newbridge Networks is one of today's fastest growing manufacturers of network systems for public and private networks. Our flexible ATM solutions (more than 250 switches shipped to date!) form the basis for the world's first commercial ATM service (BC Tel's Ubiquity service), the first national, U.S. ATM network (MFS Datanet) and a host of other innovative networks (Pacific Bell, US West, New York Telephone and others).

Whether you choose our VIVID ATM line for LANs or our *36150 MainStreet*® ATMnet™ for WANs, you can be sure of getting the performance, scalability and proven results that come only from the recognized leader in ATM design, development and implementation.

You don't have to be using virtual reality to gain from ATM today.

Whether it's for faster information, better communications media or lower communications costs, Newbridge ATM will give you the competitive edge — today. After all, Newbridge ATM systems offer the flexibility, scalability, and manageability that a wide variety of existing high-bandwidth applications already require.



Hospitals are using ATM to share real-time video and images for long-distance consultation during diagnoses and operations. Schools are using ATM to bring students and instructors together, regardless of their locations. Designers and engineers gain by using ATM to effortlessly share even the largest data and image files. And it's a widely recognized fact that emerging applications will be even more bandwidth-intensive.

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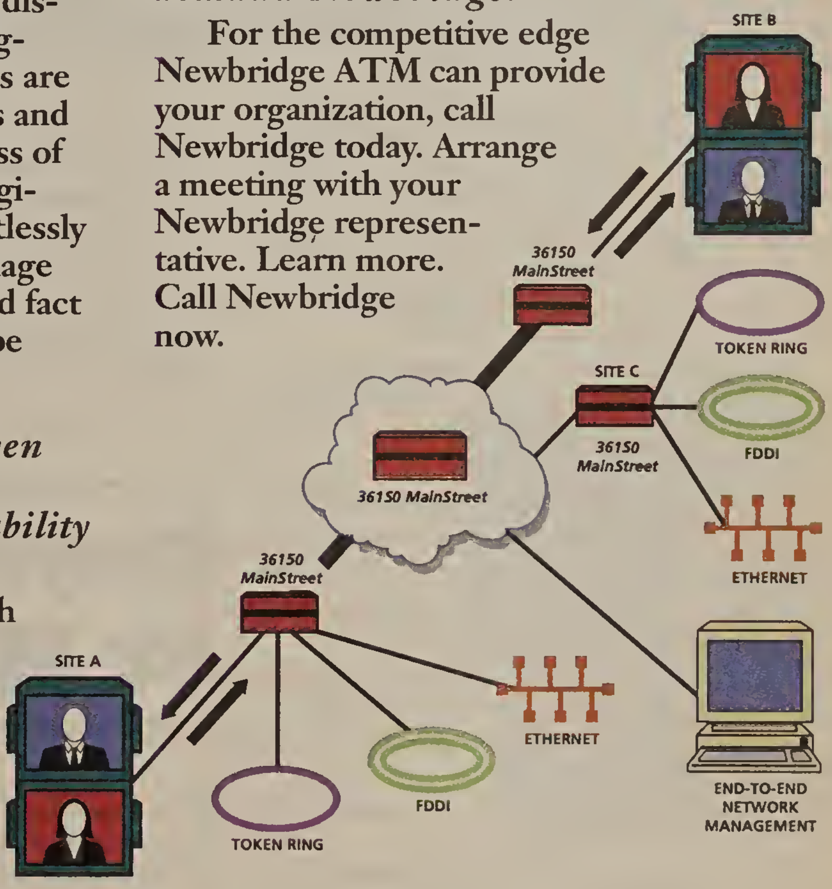
From the design and development of high-quality, reliable products to a common network management solution to the highest quality global service and support, Newbridge is committed to delivering total customer satisfaction.

That's why, in over 70 countries, more than 100 telephone companies and in excess of 10,000 other customers rely on Newbridge.

Demand the best; demand Newbridge.

For the competitive edge Newbridge ATM can provide your organization, call Newbridge today. Arrange a meeting with your Newbridge representative. Learn more. Call Newbridge now.



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Vendors curb wireless hype

BY JOANIE WEXLER

San Jose, Calif.

Wireless network industry leaders at last week's Mobile '94 show in here cut way back on hyperbole in an effort to temper user expectations.

The vendorspeak during various panels, events and interviews took on a tone uncharacteristically down-to-earth — and occasionally defensive.

Executives from Motorola, Inc., ARDIS Co., GTE Personal Communications Services and others acknowledged that the wireless market has barely gotten off the ground in terms of business users, and talked frankly about technical and cultural hurdles that will stall the true "anywhere, anytime" computing concept for at least a few years.

mobile94
A TECHNOLOGIC CONFERENCE & EXPOSITION
THE PORTABLE SYSTEMS SHOW

Motorola President Christopher Galvin said, "It takes 10 years to get any new industry jump-started," largely because human habits do not change quickly.

Frank Wapole, president of the Motorola-IBM joint venture ARDIS, a wireless network operator, made similar remarks at other events. "It will take a couple of generations for market pervasiveness," he said.

Fielding questions as to how ARDIS intends to bring its largely vertical market-oriented network to the horizontal business user, Wapole pointed out during a vendor panel session that "the verticals are the only ones today paying out a monthly cash flow."

In response to questions about which networks, technologies, protocols and service providers will persevere, he snapped, "Now is not the time to be asking for winners and losers when two [wireless data technologies] are on paper, two are working and two are in the ether."

Henrik Hogberg, vice president and general manager of Ericsson GE Mobile Communications' wireless computing division, pointed to the difficulty in porting applications to the wireless world.

"We still need standard tools for development," he said, noting the Personal Computer Communications Association's recent adoption of a wireless Hayes AT modem command set "is a good first step."

Wapole agreed. "We're still a couple years away from simplified development. We have to start from scratch because all existing applications have been developed for wired networks," he said.

Chuck Napier, director of marketing for the wireless data division of GTE Personal Communications, a Cellular Digital Packet Data (CDPD) supporter, also got away from the hype.

"There has been some overselling of when CDPD will be ready. We're taking a pragmatic approach and not setting schedules we can't meet," he said. "We don't want to slam the technology if it's not ready because we don't want users to get burned."

GTE Personal Communications intends to roll out CDPD in San Francisco during the second quarter, in Houston during the third quarter and in 10 to 15 other cities by year end.

At least one analyst agreed with the vendor straight talk.

"You're not going to see this turn out to be the year of wireless," said Jim Opfer, an independent consultant in Torrance, Calif. "There are too many unfinished products and uncertainty in the minds of users that will cause people to do little more than run pilots this year."

However, Ira Brodsky, president of Datacomm Research, Inc. in Wilmette, Ill., who chaired a panel that included Wapole and Hogberg, said, "The vendors are making a critical mistake in pulling back. This 'calm down' message is the wrong one. They need to stimulate users; after all, end users have never been the ones to create a new industry." ◪

ARDIS aims to simplify radio-based messaging

Windows package may tempt users to unplug.

BY JOANIE WEXLER

San Jose, Calif.

ARDIS Co. last week said it is poised to bring a simplified, Windows-based messaging package to users of its wireless net, a move observers said could encourage hesitant users to dabble with wireless technology.

At Mobile '94 here, ARDIS said it has repackaged the basic communications capabilities it offers to users of its packet radio net into a Windows-based application that could make communicating via the airwaves more palatable to the average business user. Today, almost all of ARDIS' 33,000 users are field service personnel.

Come April 1, users who sign on for the PersonalMessaging service will be able to send messages directly to one another without a gateway, which should speed response time and lower costs (*NW*, Feb. 28, page 4).

PersonalMessaging will require use of the Motorola, Inc. InfoTac, which functions mainly as a wireless modem but has a small display and can be used to receive messages as well as send largely predefined messages of virtually any length. That function could be used by delivery personnel, for example, to report an estimated time of arrival.

Later this year, ARDIS said it will outfit PersonalMessaging with numeric one-way paging and operator-assisted alphanumeric paging, desktop connectivity, and the ability to forward facsimiles to fax machines, notify a user that a fax was received and provide the phone number of a nearby fax machine. The downside is that users are restricted from communicating with users on other wireless or wired networks, such as RAM Mobile Data's packet radio net or the Internet.

"We have no plans to link [the service] to other nets at this time," said Rob Euler, ARDIS' vice president of business development.

That is a potential snag for some users. "I have to install applications that allow me to communicate with clients, so the nonubiquitous nature of the service concerns me," said Jay Chavez, president of Alternative Solutions, a Hermosa Beach, Calif., firm that assists corporations with telecommuting and virtual office setups.

Chavez roamed the show floor in search of services and devices that might let his firm and its customers exchange short messages with their electronic mail systems more inexpensively than with cellular services, for which he is now footing huge bills.

With today's cellular infrastructure, users pay for airtime and communicate via sessions that stay running until the voice or data conversation is complete. Packet radio nets lke ARDIS' and RAM's let users pay by the number of packets transmitted or a flat monthly rate that buys a certain amount of traffic transport (see graphic, this page).

PersonalMessaging price list	
Portable, PC-based service	
Up to 200 messages	$69/month
More than 200 messages	$.29 each
InfoTAC-only messaging service	
Up to 200 messages	$39/month
InfoTAC modem	
$1,000 (a onetime purchase cost)	

Messages can contain up to 240 characters each.

"This seems to compare favorably with stagnant one-way paging or having to carry multiple devices for paging, messaging and other services," said Laurie Coots, a net planner at Chiat/Day, Inc., an advertising agency in Venice, Calif., who witnessed a PersonalMessaging demonstration on the show floor.

ARDIS' PersonalMessaging will eventually be available on Motorola's Envoy, a sophisticated personal communicator also announced at the show (see story, page 12).

Meanwhile, ARDIS is offering the InfoTac modem for $1,000, down from the Motorola list price of $1,500 and ARDIS' former $1,200 list price, said Mary Jane Grinstead, ARDIS' senior vice president of marketing and sales.

Some observers said that still-hefty price could be an obstacle to PersonalMessaging acceptance, considering the $1,500 initial list price of Motorola's Envoy, which combines multiple, sophisticated communications functions, and the fact that InfoTac's main competitor, the Mobidem from Ericsson GE Mobile Communications, lists for $795.

©ARDIS: (708) 913-1215.

RAM readies host access option

While ARDIS Co. is busy trying to jump-start the wireless market with a simple messaging service limited to its own network, rival RAM Mobile Data is reportedly laying plans for simplified dial-up access to its net from users' host sites.

The company will roll out at the Electronic Messaging Association show next month a dial-up gateway service that will obviate the need for dedicated wireless modems or X.25 links from host sites to the RAM switching center, according to sources close to RAM.

Instead, wireless net users would request corporate host connectivity via RAM, which would make a standard dial-up phone call to the user firm's land-line modem, establish the link and provide translation between the user and host. Today, the only land line-based option for connecting a host to RAM's net is X.25.

RAM would not officially confirm that the announcement is pending, but Martin Levetin, senior vice president at the company, said, "We are looking into all possibilities for reducing user requirements for back-end systems integration. It would certainly be technically feasible for us to offer dial-in service rather than requiring users to outfit each host resource with a modem or install an X.25 line to our facilities."

BY JOANIE WEXLER

Cheyenne prepares fix for ARCserve user woes

BY CHRISTINE BURNS

Roslyn Heights, N.Y.

Complaints continued to pour into the *Network World* Reader Advocacy Force hot line last week over Cheyenne Software, Inc.'s data backup software while company officials scrambled to get a fix out the door.

The complaints about ARCserve 5.01 involve server crashes, database problems and incompatibility with hardware that Cheyenne claims is supported by the product.

NETWORK WORLD'S
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READER ADVOCACY FORCE

Cheyenne President ReiJane Haui said the company will issue an ARCserve 5.01 update by the end of the week, which addresses all of the issues raised by customers. The update will be available on CompuServe and mailed free of charge to all ARCserve 5.01 users and resellers worldwide. It includes all patches issued and documentation outlining the latest releases of hardware and software supported by ARCserve.

The update will also include software components from Novell, Inc. that were not available to Cheyenne when ARCserve 5.01 was shipped.

Don Boscio, a net administrator at Consolidated Edison, Inc., a New York-based utility company, read the March 7 R.A.F. report about Cheyenne and contacted *Network World*. Boscio said he was fed up with struggling to get ARCserve 5.01 to work with his Adaptec, Inc. Small Computer System Interface (SCSI) adapters. "It's not like I pulled these adapters out of a hat because they're standard SCSI interface cards. When I've contacted Cheyenne to tell them I've been having problems, I get the runaround," he said.

"I'm amazed that any product, let alone one that I bought to protect my data, could crash my server over 30 times in three weeks," Richard Levey, a wide-area network administrator at a New York-based educational institution, said of ARCserve 5.01. "To make matters worse, Cheyenne isn't responding fast enough to the fact that its product is crashing servers and killing data," said Levey, who also contacted *NW* after reading the R.A.F. report.

Levy said he sent a letter to Cheyenne officials asking for an immediate remedy or an immediate refund. Cheyenne officials said they are working with Levey on an immediate remedy.

©Cheyenne: (800) 243-9832.

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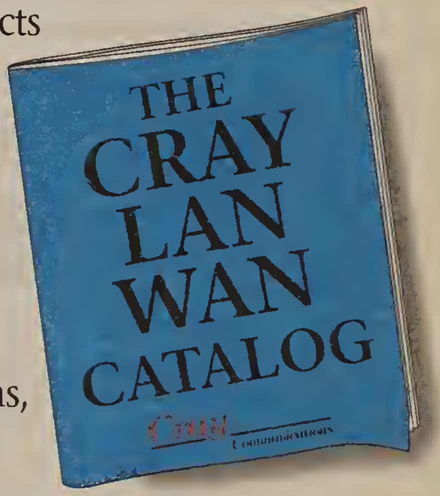

Cray
Communications

WE INTEGRATE LANs AND WANs

Novell partner HyperDesk to exit object systems mart

Company is eyeing the groupware arena instead.

BY ADAM GAFFIN

Westborough, Mass.

HyperDesk Corp., a key technology partner of Novell, Inc., last week said it is getting out of the distributed object field it helped pioneer.

The move is expected to have little impact on Novell or its customers, as Novell was reported to be reconsidering the role of HyperDesk's technology in NetWare environments and under its AppWare application development strategy anyway. However, Novell is working closely with HyperDesk to pursue further technology development, a Novell spokesman said.

Objectively speaking

ORBs serve as both a translator and a traffic cop, managing communications between objects and object-oriented applications across different platforms and network protocols. ORBs are a key component of efforts to distribute applications via object-oriented programming.

Meanwhile, HyperDesk has laid off half of its 70 employees and is reinventing itself as a vendor of groupware applications based on object technology, said Herbert Osher, chief executive officer of the Westborough, Mass., firm.

"We just decided we couldn't make any money" from object request brokers, the company's only product, he said.

That was despite the major vote of confidence Novell gave HyperDesk last year. Novell bought 20% of the company and announced plans to jointly build NetWare Loadable Module versions of HyperDesk's Distributed Object Management System (HD-DOMS), designed to give developers a common interface to NetWare services.

Novell, like many users and vendors, is looking to object technology as the platform for a new generation of distributed applications.

HyperDesk's product, HD-DOMS, is an ORB and integrated set of application development tools. ORBs act as both a translator and traffic cop, allowing objects on different platforms to communicate across a variety of protocols.

Osher said HyperDesk is in discussions with Novell and other companies, which he did not identify, about buying the rights to HyperDesk's object technology.

But Novell's interest in HP-DOMS at this point is questionable. The Provo, Utah, local-area network operating system vendor had been backing away from HD-DOMS of late, according to Tim Harmon, program director for application development strategies for consultancy META Group, Inc. in Burlingame, Calif. He said Novell, for example, had decided against shipping HD-DOMS as an integrated component of NetWare and AppWare.

Among other things, Novell was concerned about how HD-DOMS would work with object standards under development by the Object Management Group (OMG), an industry consortium to which both HyperDesk and Novell belong, Harmon said.

Osher stressed that HyperDesk's change in business direction was due not to Novell's doubts, but more to the general state of the object market. The market has become overcrowded and has grown more slowly than HyperDesk officials anticipated, he said.

Chris Stone, president of the OMG, whose Common ORB Architecture is based partly on HyperDesk technology, disagreed with Osher's assessment of the object market. He said market growth is strong, and HyperDesk was hurt by its failure to develop applications and a complete tool set for its ORB. "Middleware [such as an ORB] is the software nobody wants to pay for," Stone said.

Paul Murray, who helps evaluate new computer technologies for The Boeing Co. in Seattle, said HyperDesk's exit was unfortunate. Murray, emphasizing that he was speaking for himself and not Boeing, said HyperDesk was an independent voice in a field dominated by hardware vendors seeking to use object technology to steer users to their platforms.

But Murray said the HyperDesk decision would have little impact on his work since he had not gotten beyond the prototype stage with HD-DOMS.

HyperDesk's exit from the ORB field leaves it without a product, but Osher said the firm will not be down for long. He said that ASCII Corp., a Tokyo software company that provided the initial funding for 16 Data General Corp. engineers to found HyperDesk, has agreed to fund HyperDesk's foray into the groupware market. ◪

The history of HyperDesk

December 1990	HyperDesk is founded by 16 Data General engineers to build a platform for distributed object computing.
October 1991	OMG releases specifications for Common Object Request Broker Architecture based in part on HyperDesk work.
January 1992	HyperDesk announces HD-DOMS, its first product.
January 1993	Novell buys a 20% share of HyperDesk and announces plans to integrate HD-DOMS with NetWare and AppWare by fall.
March 1994	HyperDesk announces it is getting out of the object business, laying off half its staff and refocusing on the groupware market.

GRAPHIC BY SUSAN SLATER

Comments?

See "Contacts" box on page 2.

CyberSpeak: *Voices from the reader network*

What, if any, new management issues does wireless networking raise at your company?

"As wireless computing enables people to perform job functions at any location, security becomes a much bigger problem — so much authority is now based on where the function is performed and physical recognition of the people allowed to be in that place. This must be replaced with formal structures based on authenticated computer access."

Tom Dimock, distributed computing architect, Cornell University, Ithaca, N.Y.

"The trouble that I see with wireless LANs has to do with security. As it is now, anyone who has a properly equipped van can park outside your building and pick up data signals from the personal computers inside [your building]. Now we're really going to put these signals in the air and start bouncing them around. Security is an important issue whether it be corporate or government information. The installation with which I am associated will not be making the venture into the troubled waters of wireless LANs."

Jerry Oswald, information support officer, U.S. Army, DPCA, Services Division, Fort Harrison, Ind.

"We are a telecommunications consulting firm and see a great deal of interest and promise in wireless networking. Recently, we heard of a large Chicago hospital that had outlawed the use of all wireless devices, including cellular, due to the fact that the hospital felt that these devices were affecting electronic monitoring medical equipment. We are trying to verify this but feel this could place a huge roadblock on wireless LAN implementations. Health care is one of the vertical markets that would benefit most from wireless networking."

Name withheld upon request

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FCC shapes PCS spectrum auction

BY BILL BURCH

Washington, D.C.

The Federal Communications Commission last week indicated that it favors a PCS spectrum auction plan that should make it easier for service providers to assemble groups of licenses and offer users regional or even national coverage.

The commission's Office of Plans and Policy recommended the FCC sanction simultaneous personal communications service spectrum auctions, whereby bidders vie for groups of licenses at the same time. In contrast, sequential auctions — selling one license after another — could mean firms trying to assemble regional coverage would have to buy licenses on a secondary market. That would result in higher prices for users and, potentially, more limited coverage.

In addition, the FCC is considering assembling groups of licenses for users to bid on, a move that would favor regional providers over smaller firms, according to an auction study conducted by the Department of Commerce's National Telecommunications and Information Administration. For the user, that option should result in more widespread coverage at lower prices.

Other details are still hazy, however, such as whether the auctions will be on-line or in person, an FCC staffer said. That makes it unlikely that the FCC will meet its goal of beginning the auctions by June. Congress had granted the commission the authority to run auctions over the next five years but had hoped the auctions would be underway by this summer.

"The more the commission delays, the more it's going to diminish the value of PCS," said Anne Phillips, vice president of external affairs for American Personal Communications (APC), a PCS firm in Washington, D.C.

Although there is disagreement concerning which option is best, any auction is a step in the right direction, according to Charles Jackson, an analyst with Strategic Policy Research, Inc. in Bethesda, Md. "Even a poor auction is enormously better than a good lottery," he said.

"Even a poor auction is enormously better than a good lottery," Jackson said.

And not everyone is upset about the apparent delay in getting the auctions under way. "This additional time is really a positive thing," said Robert White, Bell Communications Research's director of PCS services and architectures. The industry needs time to work on radio technology and plan for network infrastructure. In particular, the regional Bell holding companies need to work out how to tie PCS cell traffic into the local switching net, he said.

But the delay is bad news for APC. If auctions do not take place until well into 1995, Phillips worries that PCS will wind up being an adjunct of cellular and land-line systems, rather than a full-fledged alternative network. For the user, that could mean fewer strong players and less competition.

APC won a pioneer's preference for a PCS license in the Baltimore/Washington, D.C. metropolitan area in December and had planned to bid for licenses to provide national coverage. But if auctions don't happen soon giant rivals will be able to get a head start in the PCS race, APC fears.

MCI Communications Corp. invested $1.3 billion in Nextel Communications last month with plans to update its specialized mobile radio net to provide such PCS capabilities as nationwide coverage with one-number service. The long-distance carrier boasts that Nextel will cover 95% of the U.S. population this year through licenses and interoperability agreements. ◪

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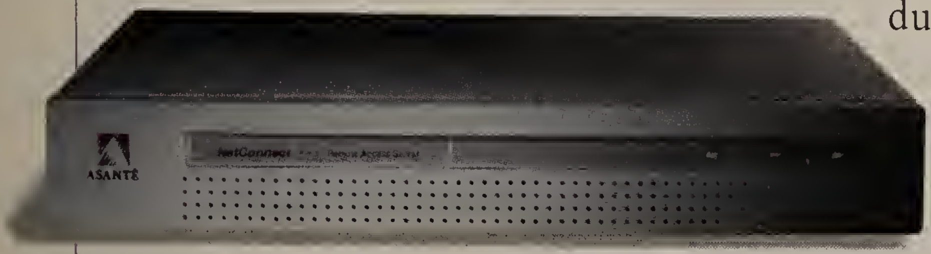

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Digital and HP roll out servers

BY CHRISTINE BURNS

Digital Equipment Corp. and Hewlett-Packard Co. are expected this week to unveil servers that can be upgraded from a single Intel Corp. 80486 processor to a Pentium chip. Additionally, HP is expected to announce a symmetrical multiprocessing server.

"The way to keep users happy is to give them an upgrade path that doesn't involve throwing out an existing machine," said Lynn Berg, program director of mid-range systems at Gartner Group, Inc., a market research firm in Stamford, Conn. "By isolating the CPU functions on a separate board, getting more power into your server only means changing the board."

Digital will unveil the low-end servers — the first from its year-old personal computer business unit — at the Hannover Fair CeBIT trade show in Germany this week. The new DECpc XL Server line will include models that run a single i486DX, 60-MHz Pentium or 66-MHz Pentium processors.

Stevan Petrofsky, product-line manager for servers at Digital, said the DECpc XL Servers will replace the DECpcST XL and DECxP Server lines. The new systems have a motherboard/daughterboard design in which CPU-specific components reside on the daughterboard and common system components on the motherboard. All three can be upgraded to Intel's 100-MHz i486-DX4, 90-MHz Pentium and Digital's own Alpha AXP chips by replacing the daughterboards.

Comparison of new Digital, HP servers

	DECpc XL Server 466	DECpc XL Server 560	DECpc XL Server 566	HP NetServer LF	HP NetServer LM
Processor	Intel 486DX2**	60-MHz Pentium**	66-MHz Pentium**	486DX2 or 66-MHz Pentium	486DX2, 60-MHz Pentium, 66-MHz Pentium or dual 66-MHz Pentium
Memory (M bytes)	8	16	16	8 or 16	16
Cache	128K	256K	256K	256K	256K
Management	Will work with Digital's Distributed Server Management product.			Will be shipped with HP NetServer Assistant 2.0. Also will support HP Remote Assistant.	
Price	$3,699	$4,699	$5,399	$3,349	$4,449

**All of the new DECpc servers are upgradable to the company's Alpha AXP, as well as Intel's 486DX4 and 90-MHz Pentium processors.

The motherboard comprises an integrated graphics controller and a fast Small Computer System Interface-2 controller. The board also has four slots for Extended Industry Standard Architecture (EISA) connections, two Peripheral Component Interconnect connections and one dual-use bus connection for network peripherals. It also has nine bays accommodating disk drives for up to 8G bytes of storage.

The DECpc XL Server line supports Banyan Systems, Inc.'s VINES, Digital's Pathworks, IBM's OS/2 LAN Server, Microsoft Corp.'s Windows NT Advanced Server (NTAS), Novell, Inc.'s NetWare and UnixWare, and The Santa Cruz Operation, Inc.'s SCO Unix.

HP's HP NetServer LF series mid-range Pentium and 486-based servers feature a modular design that provides expandability and easy access to server components for installation, upgrades and maintenance. A user can swap out a processor board for a more powerful one if the need arises. Network operating systems supported include OS/2 LAN Server, OS/2 LAN Manager, NetWare, Windows NTAS and SCO Unix.

HP will also announce the HP NetServer LM, which is configured with a 66-MHz 486DX2 chip but can be upgraded to support two 66-MHz Pentium chips for symmetric multiprocessing. The server can also be upgraded to support an error correction code memory fault tolerance feature.

The DECpc XL servers will support Digital's Distributed Server Management (DSM) software. DSM, expected to ship in July, resides on the server and works with Simple Network Management Protocol-based management platforms, including HP's OpenView and Microsoft's Hermes. DSM will monitor server activity and capacity, and alert an administrator's console when problems arise.

HP will ship all new servers with a similar product called HP NetServer Assistant 2.0. This SNMP-based tool set works with OpenView 7.1 to give system administrators troubleshooting capabilities. NetServer Assistant also has an alert feature that notifies an administrator of server problems. As an option, users can also buy HP Remote Assistant, which is an intelligent EISA card and agent software that sits on a remote server and gives an administrator control of the machine from a central management station.

©Digital: (800) 722-9332; HP (800) 752-0900.

Microsoft plans Touchdown migration

BY ROSEMARY CAFASSO

Redmond, Wash.

A Microsoft executive last week said the company will provide a migration plan for Touchdown, its next-generation electronic mail software.

Current Microsoft Mail Release 3.2 customers will be able to install the Touchdown back end and use it with their existing Microsoft Mail client software, said Laura Jennings, general manager of the Microsoft messaging business unit.

Use of older clients will prevent users from getting the new set of client functions that will ship with Touchdown, but it will allow for a gradual migration to the new architecture, she added.

Customers said they will need this kind of an approach because moving to a new E-mail system is so complex. James Lisiak, a software engineer at Chevron Information Technology Co., Chevron Corp.'s information systems arm, said upgrading to any new generation of E-mail would be a long-term project. The firm has about 7,000 Microsoft Mail users, and training them and installing the new software would need to be completed on a region-by-region basis.

Touchdown is the name for Microsoft's next-generation E-mail set of products scheduled to ship later this year. With Touchdown, Microsoft will essentially do two things: introduce an enhanced version of the current Microsoft Mail product and launch a newly

See Microsoft, *page 57*

CLARIFICATIONS

The AToM MIB was authored by an Internet Engineering Task Force working group, not by Bell Communications Research, as reported in a recent article. Bellcore only edited it (*NW,* March 7, page 1).

Although the University of Minnesota discontinued a HyperCard version of its POPMail electronic mail package for the Macintosh, it does support a non-HyperCard version of the software. POPMail, unlike Lotus Development Corp.'s cc:Mail and Microsoft Corp.'s Microsoft Mail, lets users shift messages from file servers to their workstations (*NW,* Feb. 28, page 27).

IBI, Microsoft form alliance

BY PETER LISKER

New York

Information Builders, Inc. (IBI) and Microsoft Corp. will soon jointly announce two new server-based gateways designed to give Windows and Windows NT users access to information on a wide range of database and file system platforms.

The Enterprise Data Access (EDA)/Gateway for Open Data Services (ODS) and EDA/Gateway for Windows NT, both developed by IBI, are best suited for Microsoft or Sybase, Inc. SQL Server database users looking for broader database access.

The gateways will be announced at the UniForum Conference, which will be held in San Francisco March 21-25.

"The addition of new gateways from IBI for Windows NT and ODS will be a significant help for users and developers seeking to use Windows NT as a platform for developing enterprisewide application systems that interact with heterogeneous database environments," said John Morrell, vice president of advanced operating environments at International Data Corp., a Framingham, Mass., market research firm.

See Alliance, *page 59*

NETWARE PLANS

Novell delays NetWare 4.1, instead preps 4.02 release

BY CARYN GILLOOLY

Provo, Utah

After several delays in delivering the next major release of NetWare, Novell, Inc. is now saying that NetWare 4.1 is being pulled back for further development work and will not be available until the fourth quarter.

Officials last week said NetWare 4.1 is being brought back in-house to let engineers add features not intended for the original release, which had been planned for this summer. In its place, Novell this summer will release NetWare 4.02, an upgrade to NetWare 4.01 that is being called a refresher release. It will not include major new features but will bundle all patches the company has released for 4.01 to date.

"We got input from about a dozen alpha sites and from customers that had already implemented 4.01. Based on that, we decided to make some specification changes to NetWare 4.1 and to add some new features we hadn't anticipated," said Robert Young, vice president of product marketing at Novell's NetWare Systems Group here.

Novell is focusing most of its attention on more tightly integrating the "new" NetWare 4.1 with Novell's existing product line — something for which Novell has been severely criticized by both users and analysts.

For example, users cannot run many of the NetWare Loadable Modules (NLM) currently used within NetWare 3 — such as NetWare for SAA — with NetWare 4.0 or NetWare 4.01. Novell had not planned on fixing that problem with NetWare 4.1 but now will provide that interoperability.

According to Young, NetWare 4.1 will support the NetWare for SAA, NetWare NFS and NetWare/IP NLMs.

NetWare 4.1 will also have additional enhancements Novell did not plan to add until future releases. For example, NetWare 4.1 will let administrators update directories centrally using Novell's software distribution product, rather than having to update each server manually, as is required now. Young would not provide further details about other enhancements to be included in 4.1.

He added that none of the features originally planned for 4.1 will be removed from the delayed release. Most importantly, users can still expect to see NetSynch, a tool that will help integrate NetWare 3 local-area networks into the NetWare 4 environment.

GOOD OR BAD?

While Novell's decision will mean a lengthy delay — perhaps until next year — for customers that had been waiting for NetWare 4.1 to upgrade from existing 3.X systems, analysts and users said Novell is doing what it needs to do.

"In the short term, this will hurt, but in the long term, it's better to hold off and bring out a better product," said Robert Sakakeeny, senior consultant at Aberdeen Group, Inc., in Boston. "I'd hate to see such a major product come out and not work just right."

Added Paul Shirley, director of clinical information systems at Braintree Hospital Rehabilitation Network in Braintree, Mass., a NetWare 3.12 site, "I'm not surprised by the delay. There are so many things I believe [Novell] has left out of 4.0 in addition to the SAA, NFS and IP support. I think they need to fall back and regroup even further."

Ben Rothke, network computing manager at Track Data Corp., a NetWare 3.12 user in New York, said his company is currently using NetWare NFS and has plans to install NetWare/IP. He welcomed the potential of better connectivity. "Of course, if those products were more tightly integrated with the operating system, it might make my life a lot easier," he said.

Rothke added that his company was already planning to move to NetWare 4.01 at the end of this year, so the 4.1 delay will not affect those plans.

➾Staff writer Christine Burns contributed to this story.

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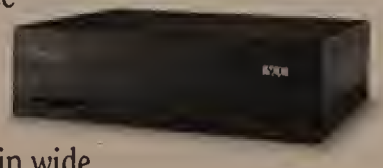

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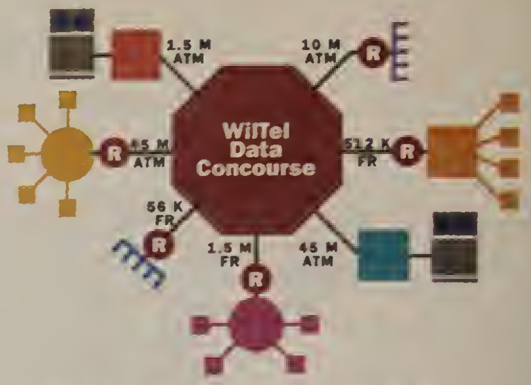

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ENTERPRISE INTERNETS

Data Network Architectures, Standards, Equipment and Management

IBM-LEGENT make distributed database management splash

BY MICHAEL COONEY
AND JIM DUFFY

Herndon, Va.

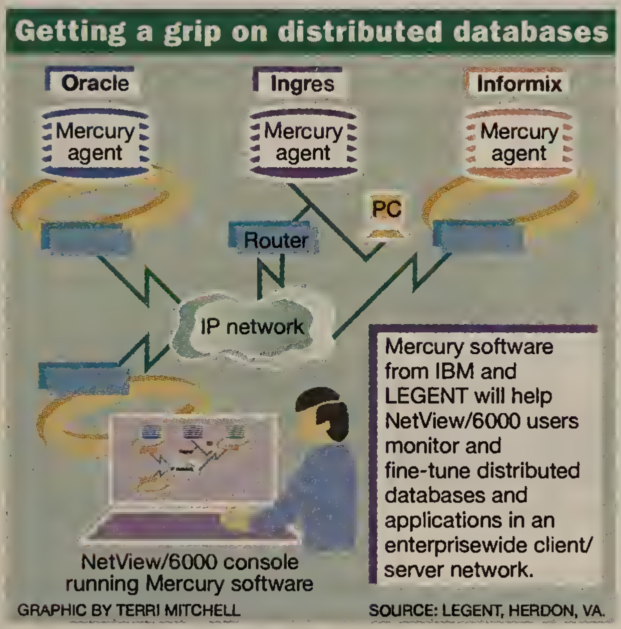
News of IBM and LEGENT Corp. teaming with the leading database vendors to deliver database management tools last week met with a favorable reception from users and analysts alike.

As expected, IBM and LEGENT announced Mercury, previously dubbed Systems Monitor Architecture, which is software that will help users monitor the performance, status and configuration of their distributed database applications from IBM's NetView/6000 platform (*NW*, March 7, page 1). At the same time, Oracle Corp., Informix Software, Inc. and The ASK Group, Inc., parent company of Ingres, pledged to include Mercury agents in their database products.

"We don't have anything to tell us what's going on at our remote databases now," said David Ward, command center manager for American Greetings in Cleveland "It is vital to us to get technology like this."

Rob McGovern, LEGENT's senior director of corporate technology, echoed Ward's comments and indicated that Mercury is applicable to all networked applications. "We see remote databases and applications growing exponentially in the next couple of years, and users will need this technology to manage that growth," he said.

Getting a grip on distributed databases



NetView/6000 console running Mercury software

Mercury software from IBM and LEGENT will help NetView/6000 users monitor and fine-tune distributed databases and applications in an enterprisewide client/server network.

GRAPHIC BY TERRI MITCHELL

SOURCE: LEGENT, HERDON, VA.

Lionel Geltman, assistant vice president at Nomura Research America in New York, said the tools are especially important for managing databases at sites where users do not have the expertise to deal with problems locally.

"What IBM and LEGENT are doing is providing a platform where we can manage all our remote databases from a central point in the net," he said. "As we here in our data center begin to gain control and responsibility over our distributed resources, it will be tools like this that I hope let us do our job more easily."

Users at Securities Industry Automation Corp. in Brooklyn, N.Y., agreed, saying they have written some of their own mechanisms to figure out in real time what's happening with remote databases.

"I think it's great [because] databases are some of the main components of distributed systems and like anything else should be instrumented, managed and controlled," said Dror Segal, director of network management and new technologies with the company.

Analysts said the Mercury technology could tie into the Management Information Base for database management under development by many database vendors (*NW*, Feb. 7, page 4).

"Those vendors are not trying to define a way to manage multiple agents via SNMP, and this could become the accepted way to do it," said Igor Stenmark, program director with the Gartner Group, Inc. consultancy in Stamford, Conn.

"What IBM and LEGENT are proposing isn't the answer to managing an entire distributed enterprise, but at least it's a step toward that goal," he added.

Mercury comprises a tool kit for developing management agents and an Agent Management System that runs on NetView/6000 to keep track of the agents.

The agents will provide remote systems monitoring of important systems data such as CPU utilization, disk usage, alert monitoring and performance thresholds.

While targeted at the NetView/6000 platform initially, the Mercury products will be ported to other industry standard management platforms such as Hewlett-Packard Co.'s OpenView and SunConnect's SunNet Manager. McGovern said that support for other platforms will be announced in about 30 days.

The companies did not announce pricing for the Mercury components but said products are expected to ship by the end of the year.

©LEGENT: (703) 708-3000; IBM: (919) 301-5928.

BRIEFS

3Com Corp. last week announced software enhancements for its line of NetBuilder bridge/routers, including interoperability with **Novell, Inc.** Multiprotocol Router Plus 2.X and other routers using IPXWAN — Novell, Inc.'s wide-area version of the Internetwork Packet Exchange (IPX) protocol.

3Com also offered a new four-tier data prioritization scheme: urgent, high, medium and low. A new queuing arbitration algorithm ensures that urgent/high priority traffic is sent with minimal delay.

The company will also offer a new three-port V.35 module for its NetBuilder II router, with each port supporting speeds of up to 2.048M bit/sec. Available now, it costs $3,295.

3Com: (408) 764-5000.

Network Equipment Technologies, Inc. (NET) last week introduced a low-end Asynchronous Transfer Mode (ATM) switch designed for **ATM workgroups**. The ATMX Model 8 switch supports up to eight interface slots and uses a 1.2G bit/sec backplane to switch ATM cells. It joins the ATMX Model 16, NET's 16-slot campus backbone switch. The Model 8 is available now starting at $30,000.

NET: (415) 780-5010.

Zoom Telephonics, Inc. last week shipped a 28.8K bit/sec external modem that costs $299, matching the price point set recently by **Microcom, Inc.**

The Zoom/FaxModem VFX 28.8 is a V.Fast Class-compatible device for IBM Personal Computer compatibles and Macintoshes that can also send and receive faxes at speeds up to 14.4K bit/sec. V.Fast Class is intended to be an interim implementation of the International Telecommunication Union's emerging V.34 standard for 28.8K bit/sec transmissions over dial-up lines.

Microcom recently announced a portable 28.8K bit/sec modem for $299 (*NW*, Jan. 31, page 2).

Zoom: (617) 423-1072.

Combinet, Inc. has announced Everywhere 160, a dial-up Integrated Services Digital Network **remote access bridge** that provides an integrated NT1 interface used for connecting conventional two-wire telephone lines to four-wire ISDN lines. The 160 eliminates the need to purchase a separate NT1 device and cabling, saving users about $200 per connection, according to Combinet. The 160 is available now for $1,190.

Combinet: (800) 967-6651.

MATRIX SWITCHES

NHC switch system pools net resources

BY SKIP MACASKILL

Montreal

NHC Communications, Inc., formerly Mux Lab, this week is expected to announce a matrix switch that enables users to expand access to and back up critical network resources across an enterprise network.

ShareIt consists of a 48-port matrix switch and personal computer-based control software. It provides traditional matrix switch capabilities in allowing net managers to switch local- and wide-area connections among various network segments and devices but offers one of the lowest price points in the market at $100 per port.

IntelliSwitch 2000, Hadax Electronics, Inc.'s matrix switch, also comes in at $100 per port, but it does not provide the Ethernet and token-ring LAN switching capabilities of ShareIt. Telenex Corp.'s Model 2700 LAN/WAN Matrix Switch handles both LAN and WAN connection switching, but it costs between $250 and $350 per port.

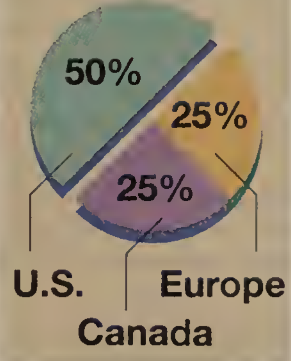
The core of ShareIt is a protocol-independent matrix switch that supports an aggregate throughput of 240M bit/sec. ShareIt supports Category 4 and 5 unshielded twisted-pair connections via RJ-45 ports or an RJ-21 50-pin phone company-style connector.

The software portion, which runs on a Windows-based PC, lets users create a database of all the LAN and WAN connections supported by the switch, track that configuration in real time, as well as trace and display device connections.

Net managers can attach a backup bridge/router or gateway device to ShareIt, so if the primary device itself fails, the net manager can switch over to the backup device.

ShareIt can also be used to provide several net segments with access to a common pool of net resources and devices, such as bridge/routers, network analyzers and Systems Network Architecture gateways. For higher net availability and to ensure access to mission-critical resources, users can run redundant links from ShareIt to the devices it supports.

Montreal-based NHC, formerly Mux Lab, recorded revenue of approximately $12 million in 1993 with 50% of the business generated in the U.S., 25% in Canada and 25% in Europe.



Chicago-based Swiss Bank CMT estimated it was able to save $500,000 in equipment costs using ShareIt. Instead of buying a network analyzer for each of its net segments to track and analyze traffic, the bank attached one analyzer to ShareIt and switched the device from segment to segment to troubleshoot problems as soon as they occurred, according to Bob Zamorocy, corporate network analyst at Swiss Bank.

Available now, ShareIt costs $2,700.

©NHC: (514) 735-2741.

Utility company makes jump into T-3 for big savings

BY MICHAEL COONEY

Los Angeles

Southern California Edison Co. is replacing its T-1 infrastructure with a faster broadband net to offer new, more exclusive services to its customers while keeping networking costs to a minimum.

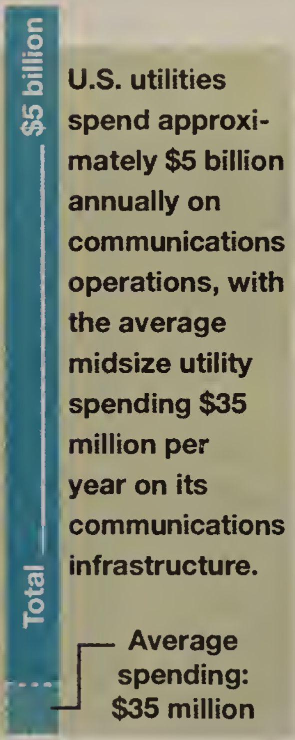
The utility, which serves Southern California, recently completed the transition from a T-1 to a 45M bit/sec T-3 backbone and has also begun implementing Synchronous Optical Network (SONET) technology in anticipation of ultimately moving to Asynchronous Transfer Mode in the future.

"With our new backbone in place, we are saving about $4,000 a month in carrier costs, and we have cut user response times by at least half in most cases," said Thang Tran, net services engineer for the utility. "The single biggest driving force behind our upgrade was the need for increased bandwidth — we knew the T-1s wouldn't come close to handling some of the engineering applications we had in mind."

The fiscal incentives behind the move were easy to see, Tran said. By midyear, the utility estimated that it would need 18 new T-1 circuits to keep up with increased traffic. The T-1s cost $800 per month, or a total of $14,400 for all of them, while the T-3 being offered by the local carrier came in at $6,850. "We got the equivalent of 56 T-1s for a little more than half the price," he said.

Tran said he also saved money by employing T3plus Networking, Inc. BMX45 Broadband Switches to control the T-3 net.

"We selected the BMX45 because of its ability to manage the bandwidth utilization," Tran said. "Plus, it was the only T-3-capable switch that offered SNMP support, which was a must for us."



U.S. utilities spend approximately $5 billion annually on communications operations, with the average midsize utility spending $35 million per year on its communications infrastructure.

The BMX45 can automatically discover newly added nodes without having to take the net down and redefine everything, he said. Its integrated support of the High Speed Serial Interface (HSSI) and future inverse multiplexing capabilities also attracted the utility.

"Inverse muxing will let us back up the T-3 backbone with T-1 circuits and provide multimegabit circuits to remote locations that don't need full T-3," Tran said.

Seven BMX45s are connected via the HSSI interface to Cisco Systems, Inc. routers. The muxes automatically assign 20M bit/sec of bandwidth every night for remote server backups.

The utility has more than 100 servers on a variety of local-area networks, Tran said, but the central LANs in the firm's Los Angeles and Irvine, Calif., offices are 16M bit/sec IBM Token Rings. Both locations, which are linked by the T-3 backbone, have identical IBM 3090 mainframes for disaster recovery.

The BMX45s also support a SONET-based fiber-optic ring that runs through 100 of the utility's primary power substations. The utility expects that setup to support a variety of new applications. For example, an automated mapping and electronic imaging application that keeps track of power lines can now be downloaded to remote servers. "With this capability, our engineers can download [information about] an entire geographic location and detail all of the power lines and switches on-screen," Tran said. "Until now, we would have had to physically send a team of engineers out to the field to track all of those things."

With typical file sizes of 50M to 100M bytes, the T-1 lines were hard-pressed to deliver such applications without locking out multiple users for several minutes, Tran said.

Imaging databases with picture identification for high-security areas can now be distributed to local servers, as well, he said.

"Ultimately, we want to use ATM because it offers the greatest amount of bandwidth to our LAN and WAN users," Tran said. ◻

Motorola, MODA go unplugged

Vendors announce tools that will give a boost to wireless equipment.

BY ELLEN MESSMER

Wireless communications products are coming out fast and furious of late, with Motorola, Inc. and start-up MODA Systems, Inc. the latest to announce tools for the unplugged.

Motorola last week unveiled its Envoy personal communicator, while MODA Systems has released Via for DOS software for giving laptops the wireless edge. Both products can help users extend corporate net resources to their mobile work force.

When it ships this summer bundled with 15 software programs, Envoy will support data sharing with Excel, Inc. and Lotus Development Corp. spreadsheets, as well electronic mail, across public messaging networks. Through its built-in modems, Envoy users will be able to send data via the ARDIS Co. packet-data service, land-line facsimile and data, switched cellular service and infrared radio.

MORRIS

"Motorola has raised the bar in the personal communicator arena with support for so many wireless services," said Bill Ablondi, an analyst at Norwell, Mass.-based BIS Strategic Decisions.

Ablondi predicted that Envoy will address business needs such as inventory control systems and hospital patient monitoring.

Data can be input into the 1.7-pound device through the on-screen keyboard by tapping a finger or using a stylus. Envoy does not support handwriting recognition, but it can accept freehand writing and drawing, enabling it to fax handwritten documents.

Envoy will be the first device to hit the market based on Magic Cap and Telescript, General Magic, Inc.'s information retrieval technology. Envoy will be able to use services on Telescript-based networks when they are available.

AT&T, the first carrier to announce support for Telescript, plans to have its PersonaLink messaging service Telescript-ready by June. In theory, an Envoy user would be able to dispatch inquiries about products and services, and place orders with businesses providing on-line support for Telescript. Telescript is also scheduled to support customized messaging such as priority mail delivery.

"But it's still the early days of Telescript," acknowledged Jeff Morris, vice president of marketing for Motorola's wireless data group. "It remains to be seen what will happen."

To make use of existing desktop applications, Envoy will ship this summer with PenWare, Inc.'s PenCell spreadsheet software that supports Excel and Lotus' 1-2-3 file formats.

River Run Software Group last week announced Magic Connection for Envoy, file-transfer and terminal-emulation software with an application program interface that will let Envoy users tie the device to any host system supporting ASCII terminal input.

Envoy, which is expected to cost less than $1,500, will also ship with Ex Machina Corp.'s PocketCall, a terminal-emulation program for both wireless services and standard telephone lines.

While giant Motorola made a splash with Envoy, far smaller vendors are also testing the wireless waters.

Cambridge, Mass.-based MODA Systems' Via for DOS is client/server software that lets portable computers access land-line networks via wireless links.

The Via for DOS server software, loaded onto a dedicated MS-DOS computer, can support up to seven mobile devices using wireless services ranging from RAM Mobile Data, Inc. wide-area packet-data services to local spread spectrum and infrared spectrum. Two different wireless services can be supported on the same Via for DOS server.

A single-user Via for DOS software kit costs $995, while the seven-user system is priced at $2,995.

☎Motorola: (708) 576-1600; MODA Systems: (617) 494-0402.

Mgmt. start-up readies its first product release

BY JIM DUFFY

Cerritos, Calif.

Start-up Arkhon Technologies, Inc. will soon unveil its first product based on software that is designed to ease management of enterprise networks.

The company's Automated Management and Control System (AMCS)/Device Manager is the result of an effort to develop a software framework that combines and coordinates the efforts of several management tools (*NW*, Aug. 23, 1993, page 4).

Arkhon's AMCS/Device Manager

- Supports SNMP manager-to-agent interaction.
- Includes PSMs for leading hubs and routers.
- Supports a diagnostic tool for NetWare LANs in mixed protocol environments.

AMCS/Device Manager runs on a Sun Microsystems, Inc. workstation under SunOS Version 4.1, while agent software runs on OS/2, Windows and Sun workstations. It uses Simple Network Management Protocol to perform device discovery and mapping along with fault, performance, administration, configuration and inventory management of devices in an enterprisewide network.

Off the shelf, AMCS/Device Manager supports applications for gathering network performance statistics in real time and filtering alerts. The system can also run device-specific applications developed by Arkhon, called Product Specific Modules (PSM) and Product Integrator Modules (PIM).

PSMs let users gather a greater number of performance and analysis statistics from managed devices and to burrow down deeper into a device — such as a hub's backplane — to pinpoint problem areas or to check its configuration.

"There's no need to go to a different product with a different look and feel," said Stan Tomsic, president of Arkhon.

Once at the backplane level, a net manager can perform drag-and-drop port reconfigurations whereby Internet Protocol routing tables can be positioned for different ports.

PSMs have been developed for 70 devices, Tomsic said, including Cisco Systems, Inc., Proteon, Inc. and Wellfleet Communications, Inc. routers, and Cabletron Systems, Inc. and SynOptics Communications, Inc. hubs. The company also developed a PSM for Novell, Inc. NetWare local-area networks that autodiscovers Internet Packet Exchange (IPX) nodes and allows managers to collect up to 60 different types of statistics.

PIMs, meanwhile, manage devices for which there are no PSMs. Managers cannot drill down to the backplane level, however, and management commands must be entered manually instead of graphically, he said.

According to analysts, the system "looks good on paper," but they are skeptical of the one-system-does-all approach.

"It's a lot of burden for one company," said Jill Huntington-Lee, principal analyst at Brandywine Network Associates in Cinnaminson, N.J. "I wonder about their depth of knowledge" concerning the 70 devices managed by PSMs.

Pricing for AMCS/Device Manager software starts at $10,000. The product, which is now in beta test at undisclosed sites, will be officially unveiled in May.

☎Arkhon: (310) 921-8848.

Vote today in *Network World's* 1994 Enterprise Technology Awards

Each week, *Network World* brings you news and views on the technologies shaping enterprise networks. Now it's your turn to speak out. NW's Enterprise Technology Awards give you the chance to spotlight suppliers whose products work best in a multi-vendor network environment. You approve and purchase these products. You have to implement and manage them. We want your votes on which vendors deserve to be recognized for their open, enterprise solutions.

This entry form lists major suppliers of LAN, WAN, software and other products. In each category, please select the ONE vendor whose product you feel is easiest to install, use and manage in a multivendor network environment. A space marked "Other" is available for write-in candidates. The winning companies will be honored during a special ceremony at NetWorld + Interop in Las Vegas in May.

This form is a prepaid mailer that can be returned at no expense to you. You may also fax the form (both sides please!) to (508) 820-3467. **ALL ENTRIES MUST BE RECEIVED BY MARCH 21, 1994.**

No entry will be accepted without your name and company name. Entries from participating vendors will be disqualified.

1. Adapters
A. Ethernet
1☐ Accton Technology Corp. 05
2☐ Artisoft, Inc.
3☐ Asante Technologies, Inc.
4☐ Cabletron Systems, Inc.
5☐ Digital Communications Associates, Inc.
6☐ Digital Equipment Corp.
7☐ D-Link Systems, Inc.
8☐ Gateway Communications, Inc.
9☐ Hayes Mirocomputer Products, Inc.
0☐ IBM
x☐ Intel Corp.
y☐ NetWorth, Inc.
1☐ Proteon, Inc. 06
2☐ Racal-Datacom, Inc.
3☐ Standard Microsystems Corp.
4☐ Thomas-Conrad Corp.
5☐ 3Com Corp.
6☐ Tiara Computer Systems, Inc.
7☐ Other ______________ 07

B. Token Ring
1☐ Andrew Corp. 08
2☐ Asante Technologies, Inc.
3☐ Digital Communications Associates, Inc.
4☐ IBM
5☐ Madge Networks, Inc.
6☐ NetWorth, Inc.
7☐ Olicom USA, Inc.
8☐ Optical Data Systems, Inc.
9☐ Proteon, Inc.
0☐ Racal-Datacom, Inc.
x☐ Standard Microsystems Corp.
y☐ Thomas-Conrad Corp.
1☐ 3Com Corp. 09
2☐ Other ______________ 10

C. FDDI
1☐ Cabletron Systems, Inc. 11
2☐ Codenoll Technology Corp.
3☐ Cisco/Crescendo Communications, Inc.
4☐ Digital Equipment Corp.
5☐ Fibronics International, Inc.
6☐ IBM
7☐ Interphase Corp.
8☐ Network Peripherals, Inc.
9☐ Network Systems Corp.
0☐ Proteon, Inc.
x☐ SBE, Inc.
y☐ Summit Microsystems Corp.
1☐ SysKonnect, Inc. 12
2☐ 3Com Corp.
3☐ Other ______________ 13

2. Bridges
1☐ Advanced Computer Communications 14
2☐ Andrew Corp.
3☐ Cabletron Systems, Inc.
4☐ CrossComm Corp.
5☐ Digital Equipment Corp.
6☐ Hewlett-Packard Co.
7☐ IBM
8☐ Magnalink Communications Corp.
9☐ Microcom, Inc.
0☐ Netronix, Inc.
x☐ Network Systems Corp.
y☐ Newbridge Networks, Inc.
1☐ Olicom USA, Inc. 15
2☐ Plexcom, Inc.
3☐ RAD Data Communications, Inc.
4☐ RAD Network Devices Inc.
5☐ Retix
6☐ 3Com Corp.
7☐ Ungermann-Bass, Inc.
8☐ Xyplex, Inc.
9☐ Other ______________ 16

3. Routers
1☐ Advanced Computer Communications 17
2☐ Ascom Timeplex, Inc. (continued)
3☐ Cisco Systems, Inc.
4☐ CrossComm Corp.
5☐ Digital Equipment Corp.
6☐ Hypercom, Inc.
7☐ IBM
8☐ Network Systems Corp.
9☐ Novell, Inc.
0☐ Plexcom, Inc.
x☐ Proteon, Inc.
y☐ RAD Network Devices, Inc.
1☐ Retix 18
2☐ 3Com Corp.
3☐ Wellfleet Communications, Inc.
4☐ Xyplex, Inc.
5☐ Other ______________ 19

4. Intelligent Hubs
1☐ Alantec 20
2☐ Artel Communications Corp.
3☐ Asante Technologies, Inc.
4☐ Ascom Timplex, Inc.
5☐ Cabletron Systems, Inc.
6☐ Chipcom Corp.
7☐ David Systems, Inc.
8☐ Fibronics International, Inc.
9☐ Fibermux Corp.
0☐ Gandalf Systems Corp.
x☐ Hewlett-Packard Co.
y☐ Hughes LAN Systems, Inc.
1☐ IBM 21
2☐ LANNET Data Communications, Inc.
3☐ NCR Corp.
4☐ NetWorth, Inc.
5☐ Optical Data Systems, Inc.
6☐ Plexcom, Inc.
7☐ Proteon, Inc.
8☐ Racal-Datacom, Inc.
9☐ RAD Data Communications, Inc.
0☐ Standard Microsystems Corp.
x☐ SynOptics Communications, Inc.
y☐ 3Com Corp.
1☐ Xyplex, Inc. 22
2☐ Other ______________ 23

5. LAN Diagnostic/Management Tools
1☐ BICC Data Networks, Inc./3Com Corp. 24
2☐ Brightwork Development
3☐ Data General Corp.
4☐ Digilog, Inc.
5☐ Hewlett-Packard Co.
6☐ IBM
7☐ Legent Corp.
8☐ Network General Corp.
9☐ NetWorth, Inc.
0☐ Novell, Inc.
x☐ ProTools
y☐ Scope Communications
1☐ Spider Systems, Inc. 25
2☐ Other ______________ 26

6. LAN Servers
1☐ Advanced Logic Research, Inc. 27
2☐ AST Research, Inc.
3☐ Compaq Computer Corp.
4☐ CompuAdd Corp.
5☐ Dell Computer Corp.
6☐ Digital Equipment Corp.
7☐ Everex Systems, Inc.
8☐ Hewlett-Packard Co.
9☐ IBM
0☐ Network Connections, Inc.
x☐ Northgate Computer Corp.
y☐ Other ______________ 28

7. Superservers
1☐ Advanced Logic Research, Inc. 29
2☐ Acer, Inc.
3☐ Altos Computer Systems
4☐ Auspex Systems, Inc.
5☐ Compaq Computer Corp.
6☐ Digital Equipment Corp. (continued)
7☐ Epoch Systems, Inc.
8☐ Hewlett-Packard Co.
9☐ IBM
0☐ NCR Corp.
x☐ NetFRAME Systems, Inc.
y☐ Parallan Computer, Inc.
1☐ Tricord Systems, Inc. 30
2☐ Unisys Corp.
3☐ Other ______________ 31

8. Network Operating Systems
1☐ Banyan Systems, Inc. 32
2☐ Digital Equipment Corp.
3☐ IBM
4☐ Microsoft Corp.
5☐ Novell, Inc.
6☐ Other ______________ 33

9. Peer-to-Peer Networks
1☐ Apple Computer, Inc. 34
2☐ Artisoft, Inc.
3☐ Gateway Communications, Inc.
4☐ Hayes Microcomputer Products, Inc.
5☐ IBM
6☐ Invisible Software, Inc.
7☐ Microsoft Corp.
8☐ Novell, Inc.
9☐ Sitka Corp.
0☐ Tiara Computer Systems, Inc.
x☐ Webcorp
y☐ Other ______________ 35

10. Wireless LANs
1☐ AT Schindler 36
2☐ BICC Communications/3COM Corp.
3☐ Caliber Tek, Inc.
4☐ California Microwave
5☐ INFRALINK of America, Inc.
6☐ Motorola, Inc.
7☐ NCR Corp.
8☐ O'Neill Communications, Inc.
9☐ Photonics Corp.
0☐ Proxim, Inc.
x☐ Telesystems SLW, Inc.
1☐ Windata, Inc. 37
2☐ Other ______________ 38

11. Apple Connectivity Products
1☐ Asante Technologies, Inc. 39
2☐ Alisa Systems, Inc.
3☐ Apple Computer, Inc.
4☐ Artisoft, Inc.
5☐ Cayman Systems, Inc.
6☐ Compatible Systems, Inc.
7☐ Dayna Communications, Inc.
8☐ Digital Equipment Corp.
9☐ Farallon Computing, Inc.
0☐ Helios USA
x☐ Novell, Inc.
y☐ Pacer Software, Inc.
1☐ Shiva Corp. 40
2☐ Sitka Corp.
3☐ Webster Computer Corp.
4☐ Other ______________ 41

12. Remote LAN Access
1☐ Cayman Systems, Inc. 42
2☐ Centrum Communications, Inc.
3☐ Citrix Systems, Inc.
4☐ Combinet, Inc.
5☐ Digital Communications Associates, Inc.
6☐ IBM
7☐ Microcom, Inc.
8☐ Multi-Tech Systems, Inc.
9☐ Norton-Lambert Corp.
0☐ Novell, Inc.
x☐ Rockwell International Corp.
y☐ Shiva Corp.
1☐ Symantec Corp. 43
2☐ Telebit Corp.
3☐ U.S. Robotics (continued)
4☐ Xircom, Inc.
5☐ Xylogics, Inc.
6☐ Other ______________ 44

13. Imaging Systems
1☐ Compulink Management Center, Inc. 45
2☐ Digital Equipment Corp.
3☐ FileNet Corp.
4☐ Formtek, Inc.
5☐ IBM
6☐ Imnet, Inc.
7☐ Indus, Int'l
8☐ Kodak
9☐ Optika Imaging Systems, Inc.
0☐ Recognition International, Inc.
x☐ Simplify Development Corp.
y☐ Sigma Systems, Inc.
1☐ View Star Corp. 46
2☐ Wang Laboratories, Inc.
3☐ Other ______________ 47

14. Database Servers
1☐ Borland International, Inc. 48
2☐ Cincom Systems, Inc.
3☐ Computer Associates International, Inc.
4☐ Computer Corp. of America
5☐ Digital Equipment Corp.
6☐ Gupta Technologies, Inc.
7☐ Hewlett-Packard Co.
8☐ IBM
9☐ Information Builders, Inc.
0☐ Informix Software, Inc.
x☐ Ingres Corp.
y☐ Micro Data Base Systems, Inc.
1☐ Microsoft Corp. 49
2☐ Novell, Inc.
3☐ Oracle Corp.
4☐ Progress Software Corp.
5☐ Revelation Technologies, Inc.
6☐ Software AG
7☐ Sybase, Inc.
8☐ Unify Corp.
9☐ XDB Systems, Inc.
0☐ Other ______________ 50

15. E-Mail Software
1☐ Banyan Systems, Inc. 51
2☐ Beyond, Inc.
3☐ CE Software, Inc.
4☐ Data General Corp.
5☐ DaVinci Systems Corp.
6☐ Digital Equipment Corp.
7☐ Enable Software
8☐ Futurus Corp.
9☐ Hewlett-Packard Co.
0☐ IBM
x☐ Lotus Development Corp./cc:Mail
y☐ Microsoft Corp.
1☐ Notework Corp. 52
2☐ Reach Software Corp.
3☐ Other ______________ 53

16. Group Collaboration Software
1☐ Collaborative Technologies Corp. 54
2☐ Coordination Technology, Inc.
3☐ Digital Equipment Corp.
4☐ Enable Software
5☐ Forefront Group
6☐ Futurus Corp.
7☐ Group Technologies, Inc.
8☐ Lotus Development Corp.
9☐ Microsoft Corp.
0☐ NCR Corp.
x☐ ON Technology, Inc.
y☐ Powercore, Inc.
1☐ Ventana Corp. 55
2☐ WordPerfect Corp.
3☐ Other ______________ 56

17. Workflow
1☐ Action Technologies, Inc. 57
2☐ Delrina Corp.
3☐ Filenet Corp.
4☐ IBM
5☐ Reach Software Corp.
6☐ Other ____________ 58

18. Client/Server Applications Development Tools
1☐ Blyth Software, Inc. 59
2☐ Cadre Technologies, Inc.
3☐ Cognos Corp.
4☐ Gupta Corp.
5☐ IBM
6☐ Inference Corp.
7☐ Informix Software, Inc.
8☐ Ingres Corp.
9☐ Object Systems
0☐ Oracle Corp.
x☐ Powersoft Corp.
y☐ Progress Software Corp.
1☐ Seer Technologies, Inc. 60
2☐ Spinnaker Software Corp.
3☐ Sybase, Inc.
4☐ Texas Instruments, Inc.
5☐ Uniface Corp.
6☐ Visix Software, Inc.
7☐ Other ____________ 61

19. Middleware
1☐ Covia Technologies, Inc. 62
2☐ Creative Systems Interface, Inc.
3☐ Digital Equipment Corp.
4☐ Hewlett-Packard Co.
5☐ Hyperdesk Corp.
6☐ IBM
7☐ Momentum Software Corp.
8☐ NCR Corp.
9☐ NetWise, Inc.
0☐ PeerLogic, Inc.
x☐ Sun Microsystems, Inc.
y☐ Symbiotics, Inc.
1☐ Systems Strategies, Inc. 63
2☐ Tivoli Systems, Inc.
3☐ Other ____________ 64

20. Integrated Network Management Systems
1☐ Applied Computing Devices, Inc. 65
2☐ Boole & Babbage, Inc.
3☐ Cabletron Systems, Inc.
4☐ Digital Equipment Corp.
5☐ Hewlett-Packard Co.
6☐ IBM
7☐ MAXM Systems Corp.
8☐ NetLabs, Inc.
9☐ NCR Corp.
0☐ Novell, Inc.
x☐ Nynex Allink Co.
y☐ Objective Systems Integrators
1☐ Sprint Corp. 66
2☐ SunConnect
3☐ Systems Center
4☐ Other ____________ 67

21. DSU/CSU
1☐ ADC Kentrox 68
2☐ AT&T Paradyne
3☐ Data Race, Inc.
4☐ Digital Access Corp.
5☐ Digital Link Corp.
6☐ Dowty Communications, Inc. (continued)
7☐ General DataComm, Inc.
8☐ Larse Corp.
9☐ Motorol Inc. (Codex, UDS)
0☐ Penril DataComm Networks
x☐ Racal-Datacom, Inc.
y☐ Teleprocessing Products
1☐ Verilink Corp. 69
2☐ Other ____________ 70

22. High-Speed Modems (9.6K & above)
1☐ AT&T Paradyne 71
2☐ Canoga-Perkins
3☐ General DataComm, Inc.
4☐ Hayes Microcomputer Products, Inc.
5☐ Microcom, Inc.
6☐ Motorol Inc. (Codex, UDS)
7☐ Multi-Tech Systems, Inc.
8☐ Octocom Systems, Inc.
9☐ Plexcom, Inc.
0☐ Practical Peripherals, Inc.
x☐ Racal-Datacom, Inc.
y☐ Telebit Corp.
1☐ US Robotics, Inc. 72
2☐ Other ____________ 73

23. Communications Software
1☐ Datastorm Technologies, Inc. 74
2☐ Digital Communications Associates, Inc.
3☐ Farallon Computing, Inc.
4☐ FTP Software, Inc.
5☐ Microcom, Inc.
6☐ Microsoft Corp.
7☐ Norton Lambert Corp.
8☐ Software Ventures Corp.
9☐ Symantec Corp.
0☐ Triton Technologies, Inc.
x☐ Walker Richer & Quinn, Inc.
1☐ Wollongong Group, Inc. 75
2☐ Other ____________ 76

24. Multiplexers
1☐ Ascom Timplex, Inc. 77
2☐ AT&T Paradyne
3☐ CASE Communications, Inc.
4☐ Gandalf Systems Corp./Infotron
5☐ General DataComm, Inc.
6☐ Micom Communications Corp.
7☐ Motorola Inc. (Codex)
8☐ Multi-Tech Systems, Inc.
9☐ Netrix Corp.
0☐ Network Equipment Technologies, Inc.
x☐ Newbridge Networks, Inc.
y☐ Plexcom, Inc.
1☐ Racal-Datacom, Inc. 78
2☐ RAD Data Communications, Inc.
3☐ StrataCom, Inc.
4☐ Tellabs Operations, Inc.
5☐ T3 Plus Networking, Inc.
6☐ Other ____________ 79
80-1

25. Packet Switches
1☐ Alcatel Business Systems, Inc. 205
2☐ Ascom Timplex, Inc.
3☐ BBN Communications Corp.
4☐ BT N.A.
5☐ Dynatech Communications, Inc.
6☐ Hughes Network Systems, Inc.
7☐ Motorola Inc. (Codex)
8☐ Netrix Corp.
9☐ Northern Telecom, Inc.
0☐ Plantronics, Inc. (continued)
x☐ Sprint International
y☐ Telematics International, Inc.
1☐ Tellabs Operations, Inc. 06
2☐ Other ____________ 07

26. PBXs
1☐ AT&T 08
2☐ Ericsson Information Systems
3☐ Fujitsu Business Communications Systems, Inc.
4☐ Harris Corp.
5☐ Hitachi America, Ltd.
6☐ InteCom, Inc.
7☐ Mitel, Inc.
8☐ NEC America, Inc.
9☐ Northern Telecom, Inc.
0☐ Rolm
x☐ Siemens Private Communications Systems
y☐ Other ____________ 09

27. Videoconferencing Systems
1☐ AT&T 10
2☐ BT N.A.
3☐ Compression Labs, Inc.
4☐ GPT Video Systems
5☐ Grass Valley Group, Inc.
6☐ Harris Corp.
7☐ Hitachi America, Ltd.
8☐ Intel Corp.
9☐ NEC America, Inc.
0☐ Oki America, Inc.
x☐ Panasonic Corp.
y☐ PictureTel Corp.
1☐ Videoconferencing Systems, Inc. 11
2☐ VideoTelecom Corp.
3☐ Vtel Corp.
4☐ Other ____________ 12

28. Voice Messaging Systems
1☐ Active Voice Corp. 13
2☐ Applied Voice Technology, Inc.
3☐ AT&T
4☐ Boston Technology, Inc.
5☐ Centigram Communications Corp.
6☐ Digital Sound Corp.
7☐ Microlog Corp.
8☐ Northern Telecom, Inc.
9☐ Octel Communications Corp.
0☐ Rolm Co.
x☐ VMX, Inc.
y☐ Other ____________ 14

29. Digital Private Line Services
1☐ Advanced Telecommunications Corp. 15
2☐ American Private Line Services, Inc.
3☐ AT&T
4☐ Cable & Wireless Communications, Inc.
5☐ Consolidated Network, Inc.
6☐ MCI Communications Corp.
7☐ Metromedia Communications Corp.
8☐ Sprint Corp.
9☐ WilTel
0☐ Other ____________ 16

30. 800 Services
1☐ Advanced Telecommunications Corp. 17
2☐ Allnet Communications Services, Inc.
3☐ AT&T
4☐ Cable & Wireless Communications, Inc.
5☐ LCI International
6☐ MCI Communications Corp.
7☐ Metromedia Communications Corp. (continued)
8☐ RCI Long Distance
9☐ Sprint Corp.
0☐ WilTel
x☐ Other ____________ 1

31. Frame Relay Services
1☐ AT&T 1
2☐ BT N.A.
3☐ Cable & Wireless Communications, Inc.
4☐ CompuServe, Inc.
5☐ Graphnet, Inc.
6☐ GTE Telephone Operations
7☐ MCI Communications Corp.
8☐ Sprint Corp.
9☐ Wiltel
0☐ Other ____________ 2

32. ISDN Services
1☐ AT&T 2
2☐ MCI Communications Corp.
3☐ Sprint Corp.
4☐ Other ____________ 2

33. Switched Digital Services
1☐ Allnet 2
2☐ AT&T
3☐ Cable & Wireless Communications, Inc.
4☐ MCI Communications Corp.
5☐ Sprint Corp.
6☐ Wiltel
7☐ Other ____________ 2

34. Value-Added Network Services
1☐ Advantage Systems, Inc. 2
2☐ Advantis (IBM Information Network/Sears Communications Co.)
3☐ AT&T
4☐ BT N.A.
5☐ CompuServe, Inc.
6☐ GE Information Services
7☐ Graphnet, Inc.
8☐ Infonet Computer Sciences Corp.
9☐ MCI Communications Corp.
0☐ Sprint Corp.
x☐ Other ____________ 2

35. Virtual Network Services
1☐ AT&T 2
2☐ Cable & Wireless Communications, Inc.
3☐ Infonet Computer Sciences Corp.
4☐ MCI Communications Corp.
5☐ Sprint Corp.
6☐ Other ____________ 2

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TITLE: ____________

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BRIEFS

Herndon, Va.-based **InterCon Systems Corp.** this week will roll out client software, dubbed InterPPP, that will allow remote Apple Computer, Inc. Macintosh and Windows personal computer users to access corporate networks that support the **Point-to-Point Protocol (PPP).** InterPPP for Macintosh, which supports System 7, will simultaneously support the Transmission Control Protocol/Internet Protocol and AppleTalk protocols over a single modem line. The software is available for $99 per copy.

InterPPP for Windows will be available as an option with TCP/Connect II, InterCon's integrated TCP/IP application suite for Windows environments and available early this year.

InterCon: (703) 709-9890.

Santa Clara, Calif.-based **SynOptics Communications, Inc.** this week will announce its LattisEngine Solution Partner Program, which will ensure that other vendors' distributed communications services, such as routing, network analysis and electronic mail applications, are certified to work on SynOptics' LattisEngine/486. The SynOptics device, a net utility server based on an Intel Corp. 80486 microprocessor, is available in both stand-alone and hub module versions.

Eicon Technology Corp., Intel, Lotus Development Corp., Novell, Inc., Oracle Corp. and Sync Research have already signed up.

SynOptics: (408) 988-2400.

Alantec Corp. this week will extend the **virtual local-area network capabilities** of its PowerHub intelligent Ethernet switching device to the Novell, Inc. Internetwork Packet Exchange (IPX) and Apple Computer, Inc. AppleTalk environments. Virtual LANs enable net managers to group users into logical workgroups regardless of their location on a network. PowerHub already supports the creation of logical subnets in Internet Protocol environments.

The San Jose, Calif., company also added an IP Helper function that allows the PowerHub to selectively forward nonroutable protocols via a routed port, as well as a remote boot feature that will allow net managers to bring up a PowerHub over the network.

Alantec also dropped PowerHub's price to $22,500 from $27,950, which results in a per-port cost of $296 for the 76 10Base-T users it supports.

Alantec: (408) 955-9000.

Racal InterLan last week joined the **stackable hub** fray when it rolled out its InterLanLink series of stackable Ethernet devices. InterLanLink is available in 17- and 33-port versions, which can be connected in any combination and support a maximum of 96 10Base-T ports. The entire stack an be managed via the Simple Network Management Protocol as a single logical system.

The hubs are available now in both managed nd unmanaged models. The 17- and 33-port managed hubs costs $1,699 and $2,699, respectively, while the unmanaged versions are tagged t $990 and $1,849, respectively.

Racal InterLan: (508) 263-9929.

Apple's net software strategy blossoming

New PowerPC hardware will play a role in company's enterprise push, as well.

BY CARYN GILLOOLY

Cupertino, Calif.

Apple Computer, Inc. last week outlined a two-year system software strategy designed to better integrate LAN-based Macintoshes into enterprise computing environments.

The strategy, which was expected, includes the following components: building support for the Transmission Control Protocol/Internet Protocol into Apple's System 7 operating system; furthering work in enterprise, platform-independent application development; and providing better application portability between Macintosh and non-Macintosh environments (*NW*, March 7, page 8).

Apple software strategy snapshot

- Integrating TCP/IP in next System 7 release.
- Devising its Open Transport architecture, which will let developers write applications that can run on multiple transport protocols.
- Licensing select Macintosh services to Unix hardware vendors.
- Continuing to work on OpenDoc, which will let developers build cross-platform applications from pieces of other programs.

"With this announcement, [Apple is] acknowledging that today, its customer base is not made up of large enterprise nets," said Jack Karp, president of Affinity Research Corp., a consulting firm in Greenwich, Conn.

"The longer term enhancements they announced will be able to steer the company more toward the large, enterprise customer," he said.

Much of Apple's software strategy revolves around future releases of its System 7 operating system, the next of which will be dubbed System 7.5 and is due out this summer. System 7 is the Macintosh operating system that currently comes in-stalled with each Macintosh computer shipped and provides local-area networking capabilities — including peer-to-peer connectivity — out of the box.

System 7.5 will boast integrated features, such as TCP/IP connectivity, that are now only available as System 7 add-ons.

"Today, Apple has MacTCP for TCP/IP connectivity, but it's always been an afterthought for that niche market that keeps demanding it," said Pieter Hartsook, editor of The Hartsook Letter, a Macintosh market research service in Alameda, Calif. "Now they're going to bundle MacTCP with all systems. That's a big change."

With TCP/IP connectivity built into each system, users will be able to tie into a TCP/IP net, such as the Internet, or access services on LAN-based Unix machines without the need for additional software.

Apple also plans to build Macintosh Easy Open and Macintosh PC Exchange software into System 7.5. These utilities let users open and edit DOS-, Windows- and OS/2-based application files from within a Macintosh application.

Apple is also planning for the longer term. The company is already working on a new version of System 7.5 — code-named Copeland — that will offer much higher level functions, such as multitasking, memory protection and a new I/O subsystem. These features will let users run more mission-critical applications on networked Macintoshes.

Even further down the road, in 1996, Apple plans to release another iteration of System 7.5 — code-named Gershwin. That release will have even more high-level functions, such as a microkernel architecture. However, Apple officials declined to provide more details.

WHAT'S UP, OPENDOC?

The other primary force behind Apple's enterprise push centers around transport- and platform-independence. These are provided under Apple's Open Transport communication architecture and the OpenDoc application development platform.

OpenDoc is not new — it is an architecture being developed by Apple and sup-

See Apple, *page 15*

NTS makes a splash in TCP/IP mart with enterprise protocols

BY SKIP MACASKILL

Santa Clara, Calif.

Start-up Network TeleSystems, Inc. (NTS) this week will introduce itself and announce its first product, a TCP/IP connectivity software package called TCP Pro.

The NTS Transmission Control Protocol/Internet Protocol software suite is designed to enable peer-to-peer and client/server connections between personal computers on local nets as well as PC-to-host links.

The software package, which is an enhanced, shrink-wrapped version of an Ungermann-Bass, Inc. TCP/IP protocol stack, is available for DOS, Windows, Windows for Workgroups, Windows NT and OS/2 environments. Also, it runs on both client and server systems.

TCP Pro includes many standard application program interfaces, such as the Network Basic I/O System and Windows Sockets. It also supports Windows utilities, including terminal access and file-transfer programs, for accessing Unix servers, mainframes and various Internet services.

TCP Pro also supports two of the three most popular LAN device drivers — Microsoft Corp.'s Network Driver Interface Specification and Novell, Inc.'s Open Data-link Interface. As a result, the protocol stack can work with net adapter cards supporting those drivers.

On the wide-area side, TCP Pro will offer device driver support for the Serial Line IP and Point-to-Point Protocol in the second quarter. This support will allow remote nodes running TCP Pro to access corporate LANs across wide-area network links.

According to John Davidson, founder and president of NTS, one feature that differentiates TCP Pro from many competing packages is its support for the Windows-based Virtual Device Driver (VxD) in Windows for Workgroups.

VxD is a 32-bit multiplexing device driver that runs in the kernel of the operating system and manages data exchanges between Windows-based applications and those initiated from within a Windows DOS box. For example, VxD will allow a user to access a Windows word processing application while concurrently running other DOS applications.

A profile of TCP Pro

Platform	Availability
DOS	Now
Windows	Now
Windows for Workgroups (with VxD)	Now
Windows NT	2Q
OS/2	2Q
DOS/Windows applications	
FTP	Now
Telnet, news reader, mail and network printing	Now
Remote copy server	Now
NOS compatibility	
NetWare	Now
LAN Manager	Now
VINES	Now

Since VxD runs in the kernel and doesn't take up conventional memory space, TCP Pro will be able to support more applications

See NTS, *page 15*

Firms line up to support Intel chips

BY CHRISTINE BURNS

All the major server vendors are falling in line with support for the newest members of Intel Corp.'s Pentium processor series, which was announced last week.

While shipping dates and details of Pentium-based network servers vary from vendor to vendor, the bottom line is that these new systems are expected to have better support for data-intensive network applications.

Chips ahoy

Server vendors are scrambling to support Intel's souped-up versions of its Pentium and 486 processors, which were announced last week. The new Pentium chip, called the P54C, is available with internal speeds of either 90 MHz or 100 MHz. The 486 upgrade, dubbed the DX4, is expected to run about 50% faster than its predecessor.

Advanced Logic Research, Inc. (ALR) and Unisys Corp. have already detailed their plans to support the new Pentium chip, and Dell Computer Corp., Hewlett-Packard Co. and IBM are expected to do the same soon.

Intel's two new P54C chips operate with internal clock speeds of 90 MHz and 100 MHz, respectively. According to in-house testing at Intel, the new chips process data at rates as much as 175% faster than Intel's previously high-end 66-MHz Pentium processor.

Intel officials said the 90-MHz chip will ship in large quantities in early April and the 100-MHz version will follow in late summer.

Server vendors said products using the chips could ship by late April or early May.

Lynn Berg, program director of mid-range computing systems at Gartner Group, Inc., a Stamford, Conn., market research firm, said the new Pentium processors give users an easier and less expensive path to supporting distributed applications on growing networks.

"This kind of processing power has typically come from the high-end world of minicomputers, and if a company expands to need that type of system, it traditionally becomes a very expensive growing pain," Berg said. "But [with the new Pentium-based servers], users of simple file and print servers have an affordable way to upgrade to machines that can handle heavy data applications."

ALR will introduce its Revolution line of servers, incorporating both the 90-MHz and 100-MHz Pentium chips in May. Pricing for single- and dual-processor versions will start at $2,995 and $4,195, respectively.

ALR will also ship a symmetric multiprocessing (SMP) machine, dubbed the Revolution Q-SMP, that will support as many as four P54C chips. The server, expected to ship in late May, will cost $6,495 for the 90-MHz Pentium

See **Intel,** *page 15*

SERVER trends

Compaq serves up new line of low-end servers

BY CARYN GILLOOLY

Houston

Compaq Computer Corp. last week rolled out a line of low-cost servers designed for branch office and departmental users linked to enterprise nets.

With the new Compaq ProSignia VS starting at less than $2,000, users can get a system with many server capabilities — such as automatic failure recovery and centralized administration — for the price of a high-end desktop personal computer.

The ProSignia VS is a single-processor machine with five Extended Industry Standard Architecture bus-master expansion slots, a NetFlex-L Ethernet or NetFlex-2 Token-Ring controller, a 32-bit fast-Small Computer System Interface-2 controller and random-access memory expansion of up to 128M bytes.

The servers come equipped with either an Intel Corp. 486SX 33-MHz, 486DX 33-MHz or 486DX2 66-MHz processor.

Today, many users settle for deploying leftover desktop machines as their departmental and branch office servers. But analysts said installing a system specifically designed as a server, such as the ProSignia VS, is usually worth the investment given the administrative headaches it can save.

The ProSignia VS models offer integrated automatic server recovery, which means that if there is a server failure, the system will automatically reboot without manual intervention.

The new Compaq servers also automatically create health logs, which record the sequence of events before a failure occurs. That information can then be used by either a local or corporate network administrator to pinpoint the failure's source.

"Look at things like the integrated fault re-covery and server health logs; a desktop turned on its side can't do any of that," said Randy Giusto, senior industry analyst at BIS Strategic Decisions, a research and consulting firm in Norwell, Mass.

Not only is Compaq a major player in the desktop and workgroup server markets, but it also was the market leader in the superserver market last year with a 67.3% share of 23,900 units shipped, according to International Data Corp. in Framingham, Mass.

Another reason to consider ProSignia VS over a leftover desktop system as a server is that the new Compaq machines can be upgraded to support higher levels of fault toler-

See **Compaq,** *page 15*

"System pays for itself in months—not years!"

NEW Voice/FAX/Data and LAN Multiplexer Saves End Users Thousands of Dollars

By Paul Longoria
San Antonio, Texas

Are you ready to be a budget hero? If you can say yes to the next two questions, then you may be in for a pleasant surprise!

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2. *Do you have any long-distance phone/FAX or multiple leased line charges between your branch offices?*

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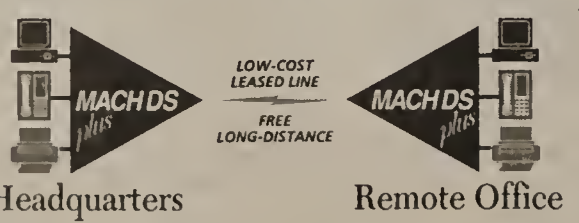

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NTS

Continued from page 13

and provide faster response times. The software's support for VxD also puts it in better position to support future 32-bit versions of Windows.

Another TCP Pro differentiator, Davidson said, will be support for voice messaging under an agreement between NTS and Octel Communications Corp. The two companies will develop features for TCP Pro that will allow the stack to link workstations to a voice server, giving users access to LAN-attached voice services such as voice mail.

Other TCP Pro features include support for the Dynamic Host Configuration Protocol that will let network administrators configure networked workstations and PCs from a central location, as well as NETBIOS Naming, which eliminates the need for net managers to maintain separate IP address lists for those end nodes in their NETBIOS System environments running TCP/IP.

TCP Pro for DOS, Windows and Windows for Workgroups is available now for $349 per copy. TCP Pro for Windows NT and OS/2 will be available in the second quarter; pricing will be announced then.

✆NTS: (408) 987-6500.

Intel

Continued from page 14

version and $6,995 for the 100-MHz version.

The MPE9000 PC server from Unisys will be a dual 90-MHz P54C server and is expected to ship late in the second quarter. It will be positioned as an entry-level machine and priced around $9,000. Unisys will also announce later this year a line of mid-range SMP-based Unix servers utilizing Intel's first-generation Pentium processors but upgradable to the P54C chip.

Separately, HP officials said the company plans to support the 90-MHz P54C chip in its NetServer LM series in May. Dell will unveil new models of its Dimension and OmniPlex lines based on both the 90-MHz and 100-MHz Pentium processors this spring. IBM will also ship servers supporting the P54C chips later this year but declined to provide further details.

Compaq

Continued from page 14

ance, including Redundant Array of Inexpensive Disks (RAID) capabilities.

The ProSignia VS machines are also upgradable to support Compaq's Insight Manager server management system. Insight Manager consists of server-resident agent software that sends information about the server to a central management console.

According to Anthony Cyplik, manager of North American systems marketing at Compaq here, the ProSignia VS plugs a gap in the low end of the company's server line from both a feature and price perspective.

Before this release, Compaq's lowest end server was the ProSignia, which costs from $3,000 to about $9,000.

The ProSignia VS servers are available now and cost from $1,730 to $4,200.

✆Compaq: (800) 345-1518.

Apple

Continued from page 13

ported by IBM, Novell, Inc., WordPerfect Corp., Xerox Corp. and others that will let users from within their applications access information and services provided through other applications. Although little new information was provided about OpenDoc, Apple executives said a software development kit would be available this fall.

The Open Transport communication architecture, however, is new and is almost as important to Apple as OpenDoc. This architecture is designed to help developers write transport-independent Macintosh applications.

"With Open Transport...people will be able to select the applications or parts [of applications] they want without worrying about network protocols, and network administrators will be able to choose the networking protocols that make the most sense for them," according to an Apple white paper.

HARDWARE DEPENDENCE

Finally, much of the success of Apple's software strategy relies on its success in moving from a Complex Instruction Set Computing- to a Reduced Instruction Set Computing-based hardware platform. Apple this week is expected to roll out a family of desktop machines based on the new PowerPC processor being developed in conjunction with IBM and Motorola, Inc.

According to analysts, Apple's PowerPC systems will offer exceptional price/performance ratios. The PowerPC processors also will give Macintoshes the power necessary to handle high-end applications, such as 3-D graphics and speech recognition.

✆Apple: (408) 996-1010.

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NET RESULTS

by Mark Gibbs

Bye-bye, Banyan?

Well, is it going to be "So long Banyan?"

It was nice when you were a real contender in the network market, but you had to go and mess it up.

Back when you had the only global directory service, you were in a strong position. But even then you failed to find a way to explain to people what you were doing and what you could do for them.

StreetTalk was way ahead of its time. But you couldn't get down to marketing; you made the whole thing a technical extravaganza that made it all look terribly complicated. This meant that only those who had the time to decipher what on earth you were talking about got the message. You just didn't give the average user much reason to go with VINES and StreetTalk.

Dear old Banyan, the approach of marketing based on technical merit alone hasn't worked for years in the computer business.

For example, Enterprise Network Services (ENS) would have been a smart move had it been released a couple of years earlier. However, by the time you rolled it out, it looked more like a move born out of desperation than a shrewd effort to corner a new market segment.

I remember talking to your people five or six years ago and asking why StreetTalk wasn't being ported to other platforms. The answer I received was that it was "technically unfeasible."

Then you found you needed to get into new markets and — lo and behold — ENS suddenly became quite portable. Hmmm.

But now you've gone and messed around with your pricing, and VINES users have railed against the new scheme (*NW,* Feb. 28, page 1). Bad move.

Did you really think that users were only going to say, "Oh, that's alright" or simply ignore it?

Come on Banyan, you've been in the market long enough to know that isn't going to happen.

Let's look at what you've proposed. You've moved from per-server pricing to per-user pricing, and you haven't given your users any way of justifying the associated cost increase.

In general, most users will wind up paying more for the same product. I can't imagine how you thought for a microsecond that no one was going to notice.

It isn't just a new pricing plan; it's a plan that goes against how your users perceive your positioning. One of your users said the new pricing scheme is "contrary to the spirit of VINES."

Once the users feel that you're moving against them, you're in trouble.

On the bright side, your recent acquisition of Beyond, Inc., is interesting. I suspect that it is going to be a good move for you as long as you don't make the product strongly tied to Intelligent Messaging (another product that was ahead of its time and that you failed to tell the market about).

The reason Beyond is going to be good for you is that in the next couple of years, I expect you're going to pull "a 3Com Corp." on us. One minute you'll be a network operating system vendor, and the next minute you'll be focusing on the network infrastructure market.

Beyond's product BeyondMail was well in advance of its time but never had the marketing push it needed.

If you take this product and move it into the broader market along with platform-independent versions of your key existing services, you could make some major inroads into the network market.

But the problem, Banyan, is that I question your corporate will. Can you really say, "We've been outmaneuvered in the network operating system market, and it's time for us to refocus"? If you can, you stand a chance of becoming a new force in the local-area network marketplace.

Come on, Banyan, show me that my gloomy predictions are incorrect. I have always admired your company's technical excellence, but now it's time to get on with some strategic marketing. Otherwise, it's going to be bye-bye, Banyan.

◆ Gibbs is a consultant and writer based in Ventura, Calif. He can be reached at (805) 647-2307 or on the Internet at mgibbs@rain.org.

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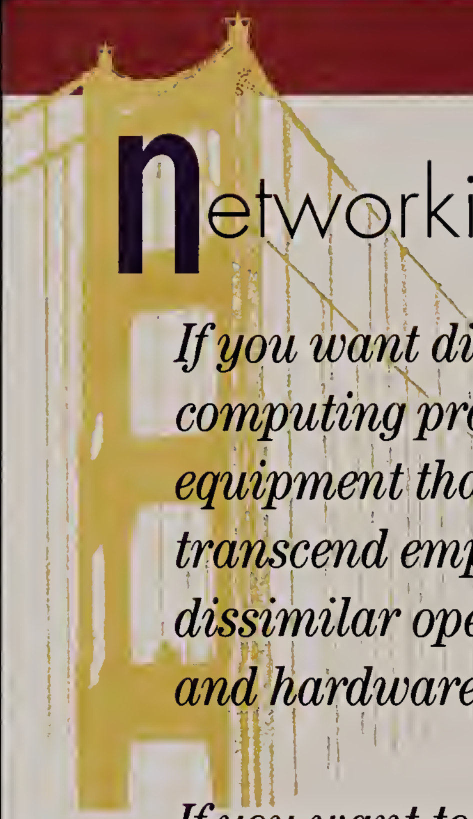

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ATM and applications solutions.

needs of every level of networking expertise: beginning, intermediate, advanced.

A top-notch Conference Program operating on the following tracks:

- Fundamentals (an introduction to LANs)
- Client/Server
- Application Development
  (perfect for programmers and developers)
- Planning and Design
- Interoperability
- Management Issues: Business (corporate strategies)
- Management Issues: Technical
- Enterprise Computing
- Software and Applications (the real utility of networks)
- Emerging Technologies
  (the future of distributed computing)
- ATM

This is the one show where you can achieve your desired end result: transmitting essential and practical information to the people who need it most.

But, that's not all. These topics will be represented in the conference sessions, by in-booth product demonstrations and in unprecedented Technical Solution Presentations in the following tracks:

- Client/Server Computing
- Network Management
- ATM
- Workgroup Computing

Participating companies will present live software-based applications in real time. Technical representatives from these companies will direct scheduled, continuous 30-minute presentations each day on the show floor.

Or you can experience the unparalleled ShowNet® system. Utilize applications like the ShowFinder, which allows you to quickly and easily find booth locations, receive information on a company's products and services and obtain literature.

Choose the right road...the one that leads to Networks Expo San Francisco.

By attending Networks Expo San Francisco in 1994, you will make the right connections for your business success. There is no one real-world solution for today's business leaders. However, there are real-world business solutions for those companies looking to move their current plans light years ahead. That solution is Networks Expo San Francisco.

Network with networking leaders

- Network Managers/Administrators
- Data Communications Managers/Administrators
- Corporate Officers/Owners
- Systems Analysts / Managers
- MIS/DP Managers
- LAN/WAN/MAN Specialists
- Programmers
- VAR Developers/ Managers
- Engineers/R&D Technical Managers
- Systems Integrators
- Financial Analysts/Managers
- Consultants

CNEPA Labs at Networks Expo San Francisco '94

CNEPA
THE ASSOCIATION OF NETWORK SERVICE PROFESSIONALS

Networks Expo San Francisco's educational programs are supported by a number of major user groups and associations. One such group, the Certified NetWare Engineer Professional Association (CNEPA), takes that support one step further.

The CNEPA, an independent professional association with a goal to advance the network computing profession, will provide members and non-members with a number of complimentary hands-on product training and educational sessions.

- Cooperative sessions that examine current strategies, offering critical information as well as vital tips.
- Training labs that are essential to data processing professionals looking to be educated about multivendor environments.
- Learning forums that serve as high-tech certification programs.

For additional information about the CNEPA Labs at Networks Expo San Francisco '94, see page 11.

SHOW HOURS

EXHIBITS ONLY

Tuesday, April 19	10:00 AM - 5:00 PM
Wednesday, April 20	10:00 AM - 5:00 PM
Thursday, April 21	10:00 AM - 4:00 PM

TUTORIALS - San Francisco Hilton & Towers

Monday, April 18	9:00 AM - 5:00 PM

SEMINARS

Tuesday, April 19	10:00 AM - 5:00 PM
Wednesday, April 20	8:30 AM - 5:00 PM
Thursday, April 21	8:30 AM - 1:00 PM

CONFERENCE OVERVIEW

KEYNOTE ADDRESS

Tuesday, April 19
9:00 AM
San Francisco Hilton & Towers

WILLIAM C. KEIPER
President and CEO
Artisoft, Inc.

THE EMERGENCE OF PEER-SERVER TECHNOLOGY

TUTORIALS

Monday, April 18
9:00 AM - 5:00 PM
San Francisco Hilton & Towers

T1 Introduction to Networking — Parts I and II
T2 Client/Server — Solving Your Rightsizing Realities
T3 Application Development in a Networked Environment
T4 Networking Windows
T5 Remote Communications Services on NetWare LANs
T6 Multimedia — Development and Implementation
T7 Internetworking with NetWare and TCP/IP
T8 Planning for Interoperability with TCP/IP
T9 Interoperability Using Bridges, Routers and Gateways
TA Extending LAN Internets to Low-Volume Sites and Remote Users
TB Is Business Process Reengineering for Your Company?
TC LAN Utilities
TD IT Management Strategies
TE Introduction to Client/Server Computing in a LAN Environment

TRACKS	TUESDAY, APRIL 19		
	10:00 AM - 11:30 AM	1:30 PM - 3:00 PM	3:30 PM - 5:00 PM
FUNDAMENTALS	**1.** Introduction to LANs — Parts I and II		**17.** Introduction to Network Applications
INTEROPERABILITY	**2.** Planning for Interoperability with TCP/IP	**9.** E-Mail Systems Interoperability	
SOFTWARE AND APPLICATIONS	**3.** Choosing the Right Windows	**10.** Which is Best — Novell or Microsoft Desktop Operating Systems?	**18.** Implementing E-Mail as a Strategic Application
CLIENT/SERVER		**11.** Client/Server Tools Update	
PLANNING AND DESIGN	**4.** Choosing the Right Server Platform	**12.** Backup/Restore Strategies	
APPLICATION DEVELOPMENT	**5.** Developing Distributed Applications	**13.** Implementing Desktop Database Applications on a Network	**19.** Developing for Multidesktop Environments
MANAGEMENT ISSUES: BUSINESS	**6.** The Business Case for LANs/WANs		**20.** Reengineering
New Track ATM	**7.** ATM — The Business Issues	**14.** Technology and Standards Overview	**21.** LAN and Desktop Connectivity
MANAGEMENT ISSUES: TECHNICAL	**8.** Fault Tolerance	**15.** Strategic Management Platform Selection	**22.** Network Performance Analysis and Reliability Testing
ENTERPRISE		**16.** Remote Access Strategies	**23.** Enterprise Messaging Strategies **24.** Connecting to the Internet
New Track EMERGING TECHNOLOGIES			

For Registration Information See Pages 12 & 13

networks expo℠

WEDNESDAY, APRIL 20			THURSDAY, APRIL 21	
8:30 AM - 10:00 AM	11:30 AM - 1:00 PM	3:30 PM - 5:00 PM	8:30 AM - 10:00 AM	11:30 AM - 1:00 PM
25. Introduction to Wide Area Networking and LAN Communications				
26. Integrating Macintosh and PC Networks	**33.** Interoperability and the AS/400	**41.** Universal Printers	**49.** Desktop-to-Host Interoperability **50.** Multiple Protocol Stacks on the Desktop	**57.** Multivendor Database Interoperability — SQL and Legacy Systems
27. Integrating Imaging and Document Management	**34.** Making Workflow Work for You	**42.** Workgroup Computing		
28. Designing Client/Server Applications		**43.** Performance Impact of Client/Server Applications on Your Network		
29. Capacity Planning for Network Resources	**35.** Overview of NetWare Directory Services	**44.** Fast Net Update	**51.** Frame Relay	**58.** NetWare 3.x Optimization
30. Developing Messaging-Enabled Applications	**36.** OOP as a Network Application Development Tool	**45.** Stop-Gap Application Gateways		
	37. Extending Networks Beyond the Corporate Wall	**46.** The Planning of Migration		**59.** Training as a Business Decision
	38. ATM vs. Fast Ethernet Implementations		**52.** WAN and Enterprise Connectivity	**60.** ATM — Interoperability with Existing Technology
31. Viruses			**53.** Network Asset and Configuration Management	**61.** Optimizing Windows on a LAN **62.** Patches, Fixes and NetWare Versions
	39. SNA and LAN Internets	**47.** Directory Services — The Key to Enterprise Networks	**54.** Security	**63.** Networking UNIX Workstations to the Enterprise
32. High-Speed Networking Alternatives — ATM, SMDS, Frame Relay	**40.** Multimedia Technologies	**48.** Wireless Technologies	**55.** Supporting Multimedia on Your Network **56.** Nomadic Computing	**64.** Storage Management

TRACK OVERVIEW

FUNDAMENTALS

introduces newcomers to the complex world of LANs with a foundation of basic networking information.
Track Chair: Neil Myers

INTEROPERABILITY

focuses on integration strategies and the realities of attempting to achieve interoperability in today's complex, multivendor computing environments.
Track Chair: Val Sribar

SOFTWARE AND APPLICATIONS

focuses on the real utility of networks — the emerging and existing applications that are used to help people work more productively.
Track Chair: Patricia Schnaidt

CLIENT/SERVER

focuses on the design and management of client/server applications in a networked environment.
Track Chair: Neil Myers

PLANNING AND DESIGN

covers strategies for designing and expanding networks as well as planning for growth and improving performance.
Track Co-Chairs: Jay Milne and Patricia Schnaidt

APPLICATION DEVELOPMENT

is designed for programmers and developers responsible for multiuser network applications and focuses on the challenge of designing, testing and implementing applications on a network.
Track Chair: Beverly Seyfert

MANAGEMENT ISSUES: BUSINESS

addresses the business issues of implementing, using and maintaining network computing technologies in a corporate environment.
Track Chair: Jay Milne

ATM

provides information on the technology and standards, LAN and desktop options, WAN connectivity, cabling impact and options, carriers and carrier connections, and the business impact.
Track Chair: Robert Harbison

MANAGEMENT ISSUES: TECHNICAL

proposes solutions to the technical difficulties network professionals face when managing PC-based networks and reveals the tools, technologies and strategies used in each solution.
Track Chair: Brent Dorshkind

ENTERPRISE

focuses on issues of interest to those responsible for designing, operating and managing large enterprise networks.
Track Chair: James Brentano

EMERGING TECHNOLOGIES

introduces technologies that will shape the future in network computing to the network professionals who implement them and the industry leaders who follow industry trends.
Track Chair: Thomas Thibault

SEMINAR CURRICULUMS

Networks Expo San Francisco '94 has seminar sessions designed for every attendee. To assist attendees in choosing applicable seminar sessions, an audience participation description is included with each listing. The following are suggested seminar curriculums for specific job functions.

Suggested Curriculum for Client/Server Application Designers:

All sessions in the Client/Server track.

Suggested Curriculum for IT Managers/Administrators:

All sessions in the Software and Applications track as well as...

30. Developing Messaging-Enabled Applications
43. Performance Impact of Client/Server Applications on Your Network
44. Fast Net Update
46. The Planning of Migration
48. Wireless Technologies
53. Network Asset and Configuration Management
54. Security

Suggested Curriculum for Application Developers:

All sessions in the Applications Development track as well as...

9. E-Mail Systems Interoperability
50. Multiple Protocol Stacks on the Desktop
52. WAN and Enterprise Connectivity

Suggested Curriculum for those new to networking:

All sessions in the Fundamentals track as well as...

14. Technology and Standards Overview

TECHNICAL SOLUTIONS PRESENTATIONS (TSPs)

Industry experts Dan Spiner and David Buerger have organized a series of technical presentations to showcase the latest solutions that can be implemented now in emerging technology areas. The presentations will include technical material relevant to planning an implementation strategy in these areas.

Companies participating in the Technical Solutions Presentations (TSPs) will present live software-based applications in real time. Technical representatives from these companies will direct scheduled, continuous 30-minute presentations each day on the show floor in the following tracks.

DAN SPINER
President
Progressive Strategies, Inc.

DAVID BUERGER
Editor
Communications Week

• Client/Server Computing

Client/server is the most important new development in IS architecture since structured programming techniques and the system life cycle. Many companies are deploying this technology in their front-line applications and others have gone operational with systems they have developed over the past few years. Educate yourself about the tools available to you in client/server technology. The Client/Server Computing TSPs will feature presentations on creating systems and implementing client/server technology.

• Network Management

Network management covers multiple activities as diverse as controlling hubs and routers, monitoring server and network performance and keeping track of LAN/WAN traffic and links. Management systems that control and report on the various network functions are headed toward greater integration and sophistication to satisfy the need for a comprehensive management system. The Network Management TSPs will clarify the options available to manage networks.

• ATM

Asynchronous Transfer Mode (ATM) is the promised solution to tomorrow's bandwidth requirements. At this time, there is a need to understand the products and services provided by ATM today and in the future so that planning can include the appropriate equipment. The ATM TSPs will showcase the technology and trends. Attendees will gain an understanding of the subject through the demonstrations.

• Workgroup Computing

Workgroup computing is a new trend that can facilitate people working together efficiently. A fundamental change in the way people work will happen as a result of new tools and techniques that are available for workgroup computing. The Workgroup Computing TSPs will cover the products and methodologies that will create cultural and organizational changes in the work environment.

TUTORIALS

LEARN HOW TO CROSS THAT BRIDGE BEFORE YOU GET THERE.

You need to find an expert who can teach you the best and fastest route to provide your users with the state-of-the-art technological solutions they need. This year's Conference Program has just those experts. Providing solutions for today; detailing long-range strategies for tomorrow. Bridges and routers. LANs and WANs. Cabling. Relational databases. It's all here where you can hear it first.

T1 Introduction to Networking — Parts I and II

Patrick Corrigan, *Managing Director, The Corrigan Group*

OVERVIEW

The use of LANs has expanded rapidly in the last few years, and the use of WANs is expanding nearly as rapidly today. Along with this explosion of technology has come an immense proliferation of acronyms and buzzwords. This session will provide an introduction to LAN and WAN technology and terminology. Part I will include a discussion of the basics of Local Area Networking, while Part II will examine LAN-to-LAN connections, remote access and Wide Area Networking.

WHO SHOULD ATTEND

Anyone who is involved or will be involved in the selection, implementation, management, use or support of LANs, remote networking or WANs.

TOPICS

Part I
- LAN communications
- LAN hardware basics
- Cabling
- Standards and access methods
- Topologies
- Client/server — what does it mean?
- LAN operating systems and protocols

Part II
- Bridges and routers
- Remote access and remote login
- Host gateways
- WAN fundamentals
- WAN protocols and connections — T-1, Frame Relay, ATM, SMDS and ISDN
- Wide-area service providers

INSTRUCTOR

Corrigan is the author of several books and numerous articles on network-related topics. His consulting work focuses on LAN system planning, design and management, LAN disaster prevention and recovery, and LAN product marketing. He is a member of the advisory boards for three industry publications — *LAN Times*, *LAN Magazine* and *NetWare Solutions*.

T2 Client/Server — Solving Your Rightsizing Realities

Richard Finkelstein, *President, Performance Computing*

OVERVIEW

Interest in client/server continues to grow as organizations accelerate their rightsizing efforts. Client/server blends the functionality of PCs with the stability of back-end database servers. Database servers promote controlled data sharing with data integrity while still allowing users to work on autonomous PC-based workstations. This blend of power and control appeals to both IS professionals and end users. However, most organizations have found that client/server is more difficult to deploy and maintain than originally envisioned. Project delays, cost overruns and aborted projects are not unusual. In addition, personnel support costs are often far greater than originally expected.

This session will cover ways to architect an effective client/server environment while minimizing the risks associated with experimental software and technologies. Major operating systems, SQL database servers, application development and end user tools will be examined, and realistic recommendations will be made based upon the capabilities and success rates of the individual software products.

WHO SHOULD ATTEND

Programmers, analysts, evaluators and end users involved in developing database applications on a network.

TOPICS
- Real-life benefits and risks of client/server technology
- Building a client/server environment
- Evaluation of SQL database servers
- Choosing front-end development and end user tools
- Object-oriented/relational database systems
- Multidimensional databases

INSTRUCTOR

Finkelstein is the founder of Performance Computing, Inc., a Chicago-based consulting company that plans and implements database applications. A well-known consultant and lecturer on the topics of SQL database servers and client/server technology, he is a frequent contributor to leading computer magazines and journals.

T3 Application Development in a Networked Environment

Beverly L. Seyfert, *Technology Practice Manager, Applications Development Group, SunNetworks, A Sun Microsystems, Inc. Business*

OVERVIEW

In the early 1980s, there were two basic application platforms: mainframes for process or data-intensive systems and PC/LAN platforms for small, department-specific applications and productivity tools. In this decade, the enterprise network is coming of age, and a variety of networked applications — client/server, messaging-enabled, groupware — are emerging as key business elements for this environment. This session will review the issues of building production-class LAN/WAN applications, including design, selection of products and tools, performance, implementing data security and integrity, building user interfaces, and planning for a smooth rollout.

WHO SHOULD ATTEND

Programmers and developers responsible for the creation and maintenance of networked applications. The topics covered will include an examination of the key concepts in network application programming and build on skills acquired as either a mainframe or PC programmer. Attendees should have some programming experience.

TOPICS
- Concepts of multiuser systems
- Types of networked applications
- Designing for the network platform
- "Choose Your Weapons" — selecting a toolset
- Network security
- "Your Gun, Your Foot" — saving end users from themselves
- Understanding and optimizing performance
- User interfaces — graphic and otherwise
- "Make It So" — moving your application to production

INSTRUCTOR

Seyfert is responsible for the Applications Development Group of SunNetworks, a new consulting organization of Sun Microsystems. SunNetworks specializes in the design, implementation and management of networks and network applications. Prior to joining SunNetworks, she was director of a consulting group that focused on creating custom applications for network platforms.

T4 Networking Windows

Howard Marks, *Chief Scientist, Networks Are Our Lives, Inc.*

OVERVIEW

Anyone who has installed Windows on a LAN can tell you that it's not as easy as it looks. Just figuring out all the ramifications of where you install Windows can make your head spin. This session will explore how to install, manage and maintain Windows on your network in order to maximize performance, reliability and most importantly, manageability. There will be a discussion of how to install Windows, which Windows product to choose, maintaining the system once it has been installed and third-party products that may make your life easier. While this session will focus on the particular needs of the NetWare user, it will also cover how to use the techniques presented on other network operating systems.

WHO SHOULD ATTEND
LAN administrators and network managers running or building PC LANs with Windows workstations.

TOPICS

- Choosing the right Windows — Windows 3.1, Windows for Workgroups 3.11
- Planning your installation
- Installing Windows
- Planning for Windows NT and Chicago
- Managing users' desktops and .INI files
- Working with Windows applications
- Program Manager alternatives
- Third-party management utilities

INSTRUCTOR
Marks is a leading LAN consultant and author specializing in Windows networking and WAN design. He is co-author of *Networking Windows — NetWare Edition* and *NT Unleashed*.

T5 Remote Communications Services on NetWare LANs

Howard Lubert, *President, HEL, Inc.*

OVERVIEW
This session will cover the selection, installation and utilization of various remote LAN communications products. It will begin with an overview of communications techniques and nomenclature as well as a history of communications services in the LAN arena. Asynchronous communications, including dial-in and dial-out communications services utilizing leading solutions such as CUBIX, J&L and NetWare Connect, will be highlighted. The afternoon session will cover WAN connectivity services utilizing dial-up and dedicated lines as well as services such as 56D. X.25, T1, FT1, Frame Relay and ATM. Products from companies such as Newport Systems Solutions will be demonstrated to illustrate a typical WAN installation. This session is presented as a practical, implementational approach to communications services on NetWare and will provide the attendee with the necessary knowledge and exposure to select, install and maintain these services in the LAN environment. Attendees will receive a diskette of leading shareware and public domain communications software and utilities.

WHO SHOULD ATTEND
System managers and administrators will learn how to correctly install, maintain and provide reliable services to LAN users with a minimum of aggravation. Resellers interested in the latest communications technology will also benefit from this session.

TOPICS

- A brief history of LAN communications
- Asynchronous communications concepts
- Dial-in services — single and multiuser support
- Dial-in services —maximizing remote performance
- Practical dial-in services — 1 to 100 lines
- Dial-out services — modem sharing/pooling
- Practical dial-out services — 1 to 100 lines
- Combining dial-in and dial-out in one box
- Remote control vs. remote node
- WAN fundamentals
- WAN bandwidth services — ATM, Frame Relay, X.25, T1, etc.
- A sample WAN installation — point-to-point
- A PDN WAN solution
- Laser, spread spectrum and other technologies
- The future of LAN/WAN communications

INSTRUCTOR
Lubert is president of HEL, Inc., a systems integration and consultancy based in Wayne, Pennsylvania. Lubert, one of the nation's first Certified NetWare Engineers (CNE) and a Certified Novell Instructor (CNI), has been responsible for the design, installation and maintenance of hundreds of Novell NetWare LANs and WANs.

T6 Multimedia — Development and Implementation

Laura Chappell, Dan Hakes and Roger Spicer,
Senior Partners, Technology Consortium

OVERVIEW
Multimedia products are being developed at a staggering rate, and they represent one of the brightest opportunities in software development for today's educational, promotional and informational markets. This technical presentation will guide you through the basic components of the media elements — audio, video, graphics and animation — as well as the interactive elements. A multimedia product will be created right before your eyes to let you experience the joys and agonies of multimedia development and playback. You'll learn how to judge minimum requirements for your multimedia stations, network bandwidth concerns and solutions, as well as development techniques of the most innovative interactive applications.

WHO SHOULD ATTEND
Three general audiences: (1) network administrators who want to prepare for implementing multimedia on their networks, (2) managers responsible for developing training or marketing products who want to evaluate the usefulness and capabilities of interactive multimedia, and (3) developers of traditional training and marketing products who want to examine the multimedia environment.

TOPICS

- The current multimedia "state of the nation"
- The elements of a superior multimedia product
- Media elements — audio, video, graphics, animation
- Interactive products vs. kiosk pieces
- Developing an interactive multimedia product
- Playback issues: network utilization, hardware requirements, etc.
- Multimedia development tools

INSTRUCTORS
Chappell, Hakes and Spicer are senior partners and interactive multimedia developers for the Technology Consortium. They have developed numerous interactive product support, training and marketing titles for major technology corporations. All are Certified NetWare Instructors and noted authors. They have created several interactive training products that ship with Novell products such as Personal NetWare, LANalyzer for Windows and NetWare Management System.

T7 Internetworking with NetWare and TCP/IP

Dave Molta, *Director, Network Systems, Syracuse University*

OVERVIEW
While NetWare has a dominant position in the LAN server marketplace, TCP/IP is the de facto standard for internetworking between diverse computing systems. Attendees will be provided with both an understanding of the similarities and differences between TCP/IP and NetWare-based networks, as well as an overview of the techniques available to integrate them effectively on both small and large networks. Special emphasis will be placed on the use of TCP/IP protocols to interconnect NetWare and UNIX environments.

This session will include a technical overview of TCP/IP combined with practical information related to the products and strategies available to provide interoperability across TCP/IP and NetWare networks. A technical discussion of major TCP/IP protocols will be accompanied by a comparison to Novell's IPX/SPX communications environment. Specific vendor products and strategies will also be discussed with an emphasis on how to apply them to a real network to solve information management problems. Attendees will also be provided with an overview of TCP/IP implementations in a UNIX environment with special emphasis on making these services accessible from a NetWare environment.

WHO SHOULD ATTEND
Network planners, managers and systems integrators responsible for the design and support of networks that include both NetWare servers and TCP/IP oriented systems. Attendees should have a general understanding of NetWare and TCP/IP.

TOPICS

- Overview of TCP/IP and the Internet
- Comparative overview of TCP/IP and Novell IPX/SPX
- IP and IPX addressing and packet formats
- Low-level TCP/IP protocols — IP, TCP, UDP
- Application-level protocols — Telnet, FTP, SMTP, SNMP
- NetWare and TCP/IP directory and name services
- Supporting IPX and TCP/IP at the workstation
- Integrating UNIX with NetWare and NFS
- Integrating TCP/IP and NetWare mail services
- Specialized TCP/IP services in a NetWare environment
- Network management in a multiprotocol environment

INSTRUCTOR
Molta is responsible for the central planning and management of Syracuse University's multiplatform distributed computing environment, which includes systems from every major computer vendor. He has conducted numerous seminars and tutorials at computing industry conferences and is a regular contributor to *Network Computing Magazine*.

T8 Planning for Interoperability with TCP/IP

Robert Harbison, *President, Network Integration Consultants*

OVERVIEW

The rapid growth of multiple computing platforms within companies requires a greater understanding of the methods of creating interoperability between the dissimilar architectures. This session will cover the use of the Transmission Control Protocol and Internet Protocol (TCP/IP) as an enabling technology to provide the underlying protocols to build interoperability between platforms.

The morning session will include a discussion of the use of TCP/IP as the enabling protocol to provide the communications between various mainframes, minicomputers, PCs and LANs, as well as the advantages and disadvantages of locating the protocol stacks in PCs, servers, minicomputers and mainframes. The afternoon session will provide an overview of the wide variety of TCP/IP products and capabilities available today and how they can be combined to provide various degrees of interconnectivity.

WHO SHOULD ATTEND

Network designers and planners who plan, design and build the communications interoperability between PCs, LANs, workstations, minicomputers and mainframes.

TOPICS

- TCP/IP protocol overview
- Protocol stacking
- Protocol stack managers
- Mixing multiple protocols
- TCP/IP product types

INSTRUCTOR

Harbison specializes in the design and implementation of LANs, WANs and multiplatform connectivity. He began working in the computer industry in 1967 and has managed numerous computer support operations covering a wide range of products. As an independent consultant, he has designed and installed networks with connectivity to IBM mainframes and minicomputers, DEC VAX computers, HP-3000 and WANG-VS computers as well as wide-area connectivity involving X.25, T1, SNA, TCP/IP, ISDN and Frame Relay.

T9 Interoperability Using Bridges, Routers and Gateways

Joseph Skorupa, *Vice President, Network and Technology Marketing, Currid & Company*

OVERVIEW

As LANs become the infrastructure for corporate-wide computing, the interconnection of networks grows in importance and complexity. Maintaining interoperability with existing mainframe-based applications during the transition to network-based computing increases the challenge faced by network designers. This session will focus on achieving interoperability via bridges, routers and gateways, and it will provide an explanation of their fundamental features and functions. Similarities and differences will be explored. Applications in departmental, premises and enterprise-wide networks will be examined. There will be an overview of common terminology and basic operating characteristics. Typical product architectures will be examined, and the advantages and disadvantages of using bridges, routers and gateways in real-world networks will be covered. This session will not provide direct product evaluations or recommend particular products.

WHO SHOULD ATTEND

Anyone involved in the design and operation of LANs that are now or will in the future become part of an Internetwork, or that must connect to disparate systems. Attendees should have a working knowledge of LANs and their major components.

TOPICS

- What is a bridge, router and gateway?
- How to decide which to use
- Interoperability between Token Ring and Ethernet
- Typical gateway architectures and features
- Managing an Internetwork

INSTRUCTOR

Skorupa's responsibilities at Currid & Company, an information technology assessment consultancy based in Houston, Texas, include the evaluation and specification of network-based computing systems with a focus on networking/internetworking design. He also provides business development and marketing services to networking product vendors. Active in the development of networking industry standards, Skorupa is chairman of the IEEE 802.3 Committee's hub management task force and actively participated in the development of StarLAN and 10BaseT standards.

TA Extending LAN Internets to Low-Volume Sites and Remote Users

John Powers, *President, Powers & Company*

OVERVIEW

Overcoming the traditional data networking bottleneck when sessions must transit the enterprise network to the remote user community is a technical challenge. Often the WAN's information transport capacity imposes a severe reduction in the overall performance of a user session. The inability of the traditional wide-area bandwidth vendors to support premises-originated data transfers that range from fax machines to wireless telephone and data terminal communication, including Ethernet, Token Ring, FDDI, ATM, SONET and high-resolution video and imaging.

This session will examine a series of networking options and tools recently made available for today's information transport system architects and managers. Interconnectivity of local and remote sessions using telephone companies, teleports, special carriers employing the latest transport technologies, such as infrared, short-haul microwave, spread spectrum services and traditional telco tariffed services, will be discussed. Application of these networking technologies in financial service organizations, health care institutions, colleges and universities will be examined. In addition, the needs of mobile or corporate users will be explored.

WHO SHOULD ATTEND

Communications consultants, public and private carriers, network equipment vendors, data communications/telecom managers, CIOs, MIS directors and communications policymakers.

TOPICS

- Interface to enterprise-wide architecture
- Multisession and application support
- Management across local and wide-area domains
- Embracing emerging standards and technologies
- Utilizing both customer-owned and public facilities
- A rural and urban deployment strategy

INSTRUCTOR

Powers brings a wealth of project knowledge to this session and integrates his experience as a teleeommunications consultant with over 600,000 lines and nodes of voice, data, video and image networking in local and wide-area deployment. He will guide attendees through the development of a strategy for implementing LAN/WAN connectivity to support low-volume sites and remote users.

TB Is Business Process Reengineering for Your Company?

Cheryl Currid, *President, Currid & Company*

OVERVIEW

Business process reengineering promises major organizational improvements — but often brings major organizational change. It breaks old paradigms about how work can and should be done. Central to many successful projects is the use of new information technology. Proper positioning of networks, databases, mobile technology and more is critical. Companies who seize technology in creative and innovative ways find effective solutions.

This session will address the tough issues companies face when trying to change fundamental business procedures to meet strategic goals. You will learn the approaches, techniques and technologies that companies use when reengineering their processes.

WHO SHOULD ATTEND

Information services staff and end users, anyone taking a leadership role in changing their organization's business processes.

TOPICS

- Defining business process reengineering
- "How to" methodologies
- Case studies and success stories
- Jobs, careers and training for reengineered organizations
- Reengineering toolset — technologies that count

INSTRUCTOR

Currid is widely known in the computer industry for her straight talk and correct assessments of getting the right information technology out of the box and successfully into the hands of business and professional people. She is the author of several books including *Computing Strategies for Reengineering Your Organization*, *The Reengineering Toolkit* and *The Electronic Invasion: Survival Guide for the Brave New World of Business Communication*.

TUTORIALS

TC LAN Utilities

Mike Burdick, *Senior Network Specialist, Bell Atlantic Business Systems*

OVERVIEW

NetWare LAN administrators are always seeking better ways to stay ahead of performance problems and downtime. This session will review the purpose and function of LAN utilities and how they can help LAN professionals. The session will begin with a focus on workstation utilities such as anti-virus software, software distribution and asset management. The afternoon session will include an examination of server utilities such as monitoring and notification, documentation and more. There will be a discussion of which statistics and functions require closest monitoring, what the numbers mean and spotting trends that could lead to disaster. Many products will be reviewed, including shareware products. A diskette with shareware utilities will be distributed.

WHO SHOULD ATTEND

LAN administrators looking to become more proactive and seeking the tools that can help in this effort. The discussions will apply to new or existing Novell NetWare sites of all shapes and sizes. Attendees should have a working knowledge of NetWare and LAN concepts.

TOPICS

- The need for workstation, server and LAN utilities
- Statistics that should be found in any utility
- Base-lining and documenting your network
- Spotting trends
- Proactive vs. reactive support

INSTRUCTOR

Burdick was one of the founders and currently serves as senior technician and team leader of the LAN help desk at Bell Atlantic Business Systems Services. The help desk provides first-, second- and third-tier support on Novell networks and the applications running on them. He has over 10 years of help desk support, consulting and installation experience in the Novell LAN environment.

TD IT Management Strategies

Diane Danielle, *President, Danielle Associates*
and
Kristin B. Marks, *Managing Director, Networks Are Our Lives, Inc.*

OVERVIEW

Information Technology (IT) management strategies that worked well in the terminal and mainframe days often don't translate well into today's exploding technological environment. On the other hand, much can be learned from IT's traditional mainframe management experience. Planning and structuring support for tomorrow's technology brings significant new challenges to managers at all levels. New strategies need to be developed to meet these challenges. This session will identify the organizational and personnel responsibilities that need to be defined. It will address personnel issues such as salary and hiring criteria. Roll-out plans, ongoing support, training, budgeting, maintenance, vendor support and department structures will be examined.

WHO SHOULD ATTEND

Directors, managers or supervisors responsible for streamlining IT systems or for downsizing, rightsizing or planning changes to their network environment. For traditional IT training, it will provide guidelines for turning chaotic networks into smoothly running networks.

TOPICS

- Defining Information Technology
- Mainframes vs. networks
- Planning for reliability
- Staffing — who's in the department?
- Asset management
- Legacy system reengineering
- Support options
- Outsourcing
- Upgrading infrastructure and/or desktops
- The role of training and certification programs
- Planning for future growth

INSTRUCTORS

Danielle has ten years of data processing experience with both mainframes and LANs. She is a contributing editor at *Network Computing Magazine*. Widely respected for her knowledge and experience with such network software as SNA gateways, printing, backup and e-mail, Danielle is well-versed in the realities of corporate network management.

Marks is responsible for projects in a variety of technical areas including LAN management, network/Windows integration and network education. She is a contributor to *LAN Magazine* and *Network World*, and a contributing editor of *Selling Networks*. She has co-authored a series of technical courseware used at educational centers worldwide and *Networking Windows — NetWare Edition*.

TE Introduction to Client/Server Computing in a LAN Environment

Dan Spiner, *Managing Director, Progressive Strategies*

OVERVIEW

Client/server technology should become an integral part of every organization's information processing strategy. The important facts to consider before commiting resources and making major architectural and product commitments will be identified. This session will help you understand which features are important and provide you with the information you need to understand this complex environment.

The morning session will begin with an introduction to the technology and terminology involved in client/server computing. The applications will be surveyed and the ways in which this architecture facilitates inquiries into databases across LANs and WANs will be explained. The linking of existing corporate data through gateways and providing access from existing LAN environments will be explained. Transport mechanisms, data repositories, transaction monitors and development tools will be covered.

The afternoon session will feature a discussion of the hardware required and the software features available in various database servers. The multiserver, multiplatform, multiprocessing, multiprotocol and fault-tolerant system necessary for enterprise-wide applications will be discussed. Brief demonstrations of the products will be interspersed throughout the day to provide a feel for the products being discussed. Attendees will receive a "cookbook type" example that includes the parts list of hardware and software required to set up a sample in-house demonstration and evaluation system.

WHO SHOULD ATTEND

Anyone looking for a thorough introduction to the subject. CIOs, IS planners, network planners, information center managers, database consultants, LAN/WAN integrators, application developers considering working in the client/server environment, department heads and business owners who want to take over the management of and access to their data.

TOPICS

- Components of client/server technology defined
- Client/server planning, design, programming and installation
- Database server terminology defined
- Novell, UNIX, NT, OS/2 as server platforms
- Using Windows front ends for point-and-click queries and application development
- Gateways, cross-platform compatibility
- Hardware and network considerations
- Security, backup, error recovery and data integrity issues

INSTRUCTOR

Spiner is a consultant in the areas of business development, venture financing, marketing strategies/product evaluations, and positioning for LAN/WAN and client/server solution companies. He has been an active participant in the growth of the microcomputer and LAN industries since the early years. He has contributed articles to *LAN Technology*, *Computer Reseller News*, *LAN Times*, *LAN Magazine* and *Systems Integration*.

CNEPA LABS

Tuesday 9:00 AM -11:00 AM	Tuesday 11:00 AM - 1:00 PM	Tuesday 1:00 PM - 3:00 PM	Tuesday 3:00 PM - 5:00 PM	Wednesday 9:00 AM -11:00 AM	Wednesday 11:00 AM - 1:00 PM	Wednesday 1:00 PM - 3:00 PM	Wednesday 3:00 PM - 5:00 PM	Thursday 9:00 AM -11:00 AM	Thursday 11:00 AM - 1:00 PM	Thursday 1:00 PM - 3:00 PM	Thursday 3:00 PM - 5:00 PM
Elements of Server Design	Elements of Server Design	Elements of Server Design	Elements of Server Design	Elements of Server Design	Elements of Server Design	Elements of Server Design	Elements of Server Design	Elements of Server Design	Elements of Server Design	Elements of Server Design	Elements of Server Design
Eliminating the Internal User-Support	Server Based Auditing & Info Mgmt.	Understanding & Reporting Server Statistics	Server Based Auditing & Info Mgmt.	Eliminating the Internal User-Support	Server Based Auditing & Info Mgmt.	Understanding & Reporting Server Statistics	Server Based Auditing & Info Mgmt.	Eliminating the Internal User-Support	Server Based Auditing & Info Mgmt.	Understanding & Reporting Server Statistics	Server Based Auditing & Info Mgmt.
SNMP Agents	UPS/Server Design	SNMP Agents	UPS/Server Design	SNMP Agents	UPS/Server Design	SNMP Agents	UPS/Server Design	SNMP Agents	UPS/Server Design	SNMP Agents	UPS/Server Design
Performance & Fault Tolerance of RAID Technology	Performance & Fault Tolerance of RAID Technology	Performance & Fault Tolerance of RAID Technology	Performance & Fault Tolerance of RAID Technology	Performance & Fault Tolerance of RAID Technology	Performance & Fault Tolerance of RAID Technology	Performance & Fault Tolerance of RAID Technology	Performance & Fault Tolerance of RAID Technology	Performance & Fault Tolerance of RAID Technology	Performance & Fault Tolerance of RAID Technology	Performance & Fault Tolerance of RAID Technology	Performance & Fault Tolerance of RAID Technology
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Multi-Protocol Routing	Multi-Protocol Routing	Multi-Protocol Routing	Multi-Protocol Routing	Multi-Protocol Routing	Multi-Protocol Routing	Multi-Protocol Routing	Multi-Protocol Routing	Multi-Protocol Routing	Multi-Protocol Routing	Multi-Protocol Routing	Multi-Protocol Routing
Network Printing Solutions	Network Printing Solutions	Network Printing Solutions	Network Printing Solutions	Network Printing Solutions	Network Printing Solutions	Network Printing Solutions	Network Printing Solutions	Network Printing Solutions	Network Printing Solutions	Network Printing Solutions	Network Printing Solutions
Lotus Notes	Lotus Notes	Lotus Notes	Lotus Notes	Lotus Notes	Lotus Notes	Lotus Notes	Lotus Notes	Lotus Notes	Lotus Notes	Lotus Notes	Lotus Notes
Netware 3.12 Messaging	Netware 3.12 Messaging	Netware 3.12 Messaging	Netware 3.12 Messaging	Netware 3.12 Messaging	Netware 3.12 Messaging	Netware 3.12 Messaging	Netware 3.12 Messaging	Netware 3.12 Messaging	Netware 3.12 Messaging	Netware 3.12 Messaging	Netware 3.12 Messaging
Netware 4.0	Netware 4.0	Netware 4.0	Netware 4.0	Netware 4.0	Netware 4.0	Netware 4.0	Netware 4.0	Netware 4.0	Netware 4.0	Netware 4.0	Netware 4.0
Software Distribution using Netware Navigator	Software Distribution using Netware Navigator	Software Distribution using Netware Navigator	Software Distribution using Netware Navigator	Software Distribution using Netware Navigator	Software Distribution using Netware Navigator	Software Distribution using Netware Navigator	Software Distribution using Netware Navigator	Software Distribution using Netware Navigator	Software Distribution using Netware Navigator	Software Distribution using Netware Navigator	Software Distribution using Netware Navigator
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Asynchronous Dial-in/Dial-out	Asynchronous Dial-in/Dial-out	Asynchronous Dial-in/Dial-out	Asynchronous Dial-in/Dial-out	Asynchronous Dial-in/Dial-out	Asynchronous Dial-in/Dial-out	Asynchronous Dial-in/Dial-out	Asynchronous Dial-in/Dial-out	Asynchronous Dial-in/Dial-out	Asynchronous Dial-in/Dial-out	Asynchronous Dial-in/Dial-out	Asynchronous Dial-in/Dial-out
Networked Windows Workshop	Networked Windows Workshop	Networked Windows Workshop	Networked Windows Workshop	Networked Windows Workshop	Networked Windows Workshop	Networked Windows Workshop	Networked Windows Workshop	Networked Windows Workshop	Networked Windows Workshop	Networked Windows Workshop	Networked Windows Workshop
Windows NT	Windows NT	Windows NT	Windows NT	Windows NT	Windows NT	Windows NT	Windows NT	Windows NT	Windows NT	Windows NT	Windows NT

CNEPA
THE ASSOCIATION OF NETWORK SERVICE PROFESSIONALS

FREE 'Hands-On' Technical Training

Register Early—Space is Limited • Free 'Hot Start' Handouts to All Attendees

Please arrive 5-minutes early so lab sessions can start on time • Product drawings will be held after each session

The CNEPA Lab schedule is subject to change. Bruno Blenheim, Inc., producers of Networks Expo, will provide an updated schedule on site at the Moscone Convention Center. For updated information on the CNEPA Lab schedule and membership information, contact the CNEPA at 800-926-3776.

REGISTRATION INSTRUCTIONS

TO REGISTER BY MAIL

1. Complete the registration form in its entirety. Incomplete or improperly completed forms will not be processed and will be returned. **All forms must be received by April 8, 1994.**
2. Select the Seminars, Tutorial and/or Package (if applicable) of your choice.
3. Complete the method of payment portion of the form. When registering by mail, the following forms of payment are accepted:
   - **a.** Company/personal check or money order payable (in U.S. funds) to Bruno Blenheim, Inc.
   - **b.** Credit card (MasterCard, VISA and American Express only) — be sure to include card number, expiration date and signature.
   - **c.** Government purchase orders. Original purchase orders only must be submitted in triplicate and mailed together with completed registration form (photocopies and faxes are not acceptable). Purchase orders must have P.O. number, fee amount, reference attendee name(s), full attendance description and complete billing address. Payment on all purchase orders processed is due upon receipt of Networks Expo invoice.
4. Mail completed form with appropriate payment by April 8, 1994 to: Networks Expo, P.O. Box 1521, Englewood Cliffs, NJ 07632.

TO REGISTER BY FAX (Credit Card Orders Only)

1. Complete the registration form in its entirety. **DO NOT FAX THIS FORM AFTER APRIL 8, 1994. After April 8, you may only register on site.**
2. Select the Seminars, Tutorial and/or Package (if applicable) of your choice.
3. Select the credit card of your choice (MasterCard, VISA and American Express only) — be sure to include card number, expiration date and signature.
4. Fax completed form by April 8, 1994 to: 201-346-1571.

TO REGISTER AT THE DOOR

Advance registration is strongly recommended to avoid on-site lines and afford you valuable savings. You are welcome to register at the show, but may not use this form and prices will increase. (See on-site fees listed under Registration Fees.) Deadline for all advance processing is April 8, 1994. After that date, you may register only at the door.

CONFIRMATIONS

Registration forms received by March 25 will be confirmed by mail, and badges will be sent to you prior to the show. Orders received between March 25 and April 8 will be confirmed by mail, and badges will be held at the "Preregistered Attendee" counter at the Convention Center. Please bring your confirmation with you when picking up your badge. If you do not receive a confirmation in the mail prior to the show, call the Registration Department at 800-829-3976 to confirm your order. All foreign orders will be confirmed by mail, and badges will be held for pick-up at the "Preregistered Attendee" counter at the Convention Center.

REGISTRATION FEES

	Advance Registration *(Before April 8)*	On-Site Registration *(After April 8)*
EXHIBITS		
1 day Exhibits Only	$30	$40
3 days Exhibits Only	$60	$75
SEMINARS AND EXHIBITS ONLY		
Any 1 Seminar and 3 days Exhibits	$115	$135
Full Conference* *(3 days any/all Seminars and 3 days Exhibits)*	$395	$500
TUTORIAL AND EXHIBITS ONLY		
Tutorial** and 3 days Exhibits	$295	$395
PACKAGES		
Tutorial**, Full Conference* and 3 days Exhibits	$575	$775

*Registration includes a Conference Manual.
**Registration includes a Tutorial Manual and luncheon.

ON-SITE TUTORIAL REGISTRATION

All Tutorials will be held on Monday, April 18, 1994 at the San Francisco Hilton & Towers from 9:00 AM to 5:00 PM. On-site registration for the Tutorials will be held on Monday, April 18, 1994 at the San Francisco Hilton & Towers from 7:00 AM to 10:00 AM.

networks expo℠

SHOW HOURS

EXHIBITS ONLY

Tuesday, April 19	10:00 AM	5:00 PM
Wednesday, April 20	10:00 AM	5:00 PM
Thursday, April 21	10:00 AM	4:00 PM

TUTORIALS – San Francisco Hilton & Towers

Monday, April 18	9:00 AM	5:00 PM

SEMINARS

Tuesday, April 19	10:00 AM	5:00 PM
Wednesday, April 20	8:30 AM	5:00 PM
Thursday, April 21	8:30 AM	1:00 PM

REGISTRATION FORM

NOT VALID AFTER APRIL 8, 1994

▸ NETWORKS EXPO SAN FRANCISCO '94

networks expo℠

April 19-21, 1994 • Moscone Convention Center

ADVANCE DISCOUNT REGISTRATION FORM

PLEASE READ ALL INSTRUCTIONS ON OPPOSITE PAGE BEFORE COMPLETING THIS FORM. We cannot process without this information. Use one form per person; photocopy if necessary. This form may only be used in advance of the show and is not valid for on-site registration. Advance registration must be received by April 8, 1994. On-site registration fees are higher than advance fees. **All registrations are nonrefundable.**

Networks Expo is a professional trade event only. No one under the age of 18 is permitted on site.
Networks Expo reserves the right to use photographs taken of you at the show for promotional purposes.

NOT GOOD ON SITE

1 Print all information as you would like it to appear on your badge.

NAME ______________________________

TITLE ______________________________

COMPANY ______________________________

ADDRESS ______________________________

CITY/STATE/ZIP/COUNTRY ______________________________

TELEPHONE (   ) ______________ FAX (   ) ______________

2 Check the appropriate box(es), fill in corresponding fee(s) and calculate payment.

EXHIBITS ONLY

☐ (EO)	All 3 days	$60.00	
☐ (ET)	Tuesday Only	$30.00	
☐ (EW)	Wednesday Only	$30.00	
☐ (EH)	Thursday Only	$30.00	
			$ __________

SEMINARS (All Seminar registrations include 3 full days admission to Exhibits.)

☐ (S_)	Any 1 Seminar	$115.00 x ______ (# of Seminars) =	$ __________
☐ (FC)	Full Conference	$395.00	$ __________

TUTORIAL & EXHIBITS

(Tutorial on Monday, April 18 Only)

Each Tutorial registration includes 3 days of Exhibits.

Please check one box below:

☐ T1 ☐ T2 ☐ T3 ☐ T4 ☐ T5 ☐ T6 ☐ T7
☐ T8 ☐ T9 ☐ TA ☐ TB ☐ TC ☐ TD ☐ TE

Tutorial Fee: $295.00 $ __________

PACKAGE

Each Package registration includes 1 Tutorial, any/all Seminars (Full Conference) and 3 days of Exhibits. Please check the box below that corresponds to the Tutorial of your choice:

☐ T1FC ☐ T2FC ☐ T3FC ☐ T4FC ☐ T5FC ☐ T6FC ☐ T7FC
☐ T8FC ☐ T9FC ☐ TAFC ☐ TBFC ☐ TCFC ☐ TDFC ☐ TEFC

Package Fee: $575.00 $ __________

3 YOUR TYPE OF COMPANY:

(CHECK ONE ONLY)

TRADE RESELLERS

- 1 ☐ Computer Consultant
- 2 ☐ Computer Dealer/Retailer
- 3 ☐ Computer OEM
- 4 ☐ Office Products Dealer
- 5 ☐ Service Vendor
- 6 ☐ Software Developer
- 7 ☐ Systems House
- 8 ☐ Turnkey Vendor
- 9 ☐ Value Adder (VAR/VAD)
- 10 ☐ Distributor
- 11 ☐ Other (Specify)__________

CORPORATE VOLUME BUYERS

- A ☐ Financial
- B ☐ Communications
- C ☐ Education
- D ☐ Engineering
- E ☐ Government
- F ☐ Medical/Health Care
- G ☐ Service/Business
- H ☐ Insurance
- I ☐ Law Office
- J ☐ Manufacturing
- K ☐ Retail Sales
- L ☐ Transportation
- M ☐ Utility
- N ☐ Other (Specify)__________

YOUR JOB FUNCTION:

(CHECK ONE ONLY)

- AA ☐ Administration/Financial Management
- BB ☐ Consultant
- CC ☐ Corporate Owner/Officer
- DD ☐ Data/Telecommunications Management
- EE ☐ Engineer (All)
- FF ☐ IS Director/Manager
- GG ☐ IS Staff
- HH ☐ Network Staff
- II ☐ Sales & Marketing Director/Manager
- JJ ☐ Systems Support
- KK ☐ Systems Analyst
- LL ☐ Systems Project/Group Leader
- MM ☐ Systems Programmer
- NN ☐ Specialist Departmental IS
- OO ☐ PC/Micro Specialist
- PP ☐ LAN Specialist
- QQ ☐ Network Specialist
- RR ☐ Data/Telecommunications Specialist
- SS ☐ Other (Specify)__________

PRODUCT/TECHNOLOGY INTEREST:

(CHECK ALL THAT APPLY)

- A0 ☐ Bridges/Routers/Gateways/Hubs
- A1 ☐ Broadband Equipment/Services
- A2 ☐ LANs/Interoperability
- A3 ☐ ISDN/SMDS/Frame Relay/ATM
- A4 ☐ Integrated Voice/Data Equipment/Services
- A5 ☐ International/Global Services
- A6 ☐ Messaging — Voice/E-Mail
- A7 ☐ Network Management Systems
- A8 ☐ Satellite Equipment/Services
- A9 ☐ Wireless Communications

YOUR ROLE IN BUYING DECISION:

(CHECK ALL THAT APPLY)

- B0 ☐ Final Decision Maker
- B1 ☐ Recommend
- B2 ☐ Specify
- B3 ☐ No Role

4 Circle the Seminars you wish to attend. All Seminars are first come, first seated.

Tuesday, April 19								
10:00 AM - 11:30 AM	1	2	3	4	5	6	7	8
1:30 PM - 3:00 PM	9	10	11	12	13	14	15	16
3:30 PM - 5:00 PM	17	18	19	20	21	22	23	24
Wednesday, April 20								
8:30 AM - 10:00 AM	25	26	27	28	29	30	31	32
11:30 AM - 1:00 PM	33	34	35	36	37	38	39	40
3:30 PM - 5:00 PM	41	42	43	44	45	46	47	48
Thursday, April 21								
8:30 AM - 10:00 AM	49	50	51	52	53	54	55	56
11:30 AM - 1:00 PM	57	58	59	60	61	62	63	64

NW-94

5 METHOD OF PAYMENT

☐ MASTERCARD ☐ VISA ☐ AMEX

☐ CHECK or MONEY ORDER ENCLOSED
(Payable in U.S. funds to Bruno Blenheim, Inc.)

☐ PURCHASE ORDER IN TRIPLICATE
(No faxes allowed. See instructions on opposite page.)

Please include credit card number and expiration date with charge orders!

____-____-____-____
Card No.

Expiration Date: ___/___ (Month Year)

Amount Enclosed $__________

X______________________________
Signature *(as shown on credit card)*

Mail completed registration form with payment to:

NETWORKS EXPO
P.O. Box 1521
Englewood Cliffs, NJ 07632
800-829-3976
201-346-1400

CREDIT CARD ORDERS ONLY
can be faxed to: 201-346-1571.

AB94

FOR OFFICE USE ONLY

Approval No. __________ Check No. __________ P.O. No. __________

KEYNOTE ADDRESS

Tuesday, April 19, 9:00 AM
San Francisco Hilton & Towers

WILLIAM C. KEIPER
President and Chief Executive Officer
Artisoft, Inc.

THE EMERGENCE OF PEER-SERVER TECHNOLOGY

Keiper will share his vision of the capabilities and benefits of tomorrow's network operating systems. He will discuss the growing trend among organizations to satisfy connectivity needs by implementing a combination of high-end peer-to-peer technology with a client/server architecture, and he will show the benefits of such an infrastructure.

Keiper will address the ways in which tomorrow's network operating systems are progressing beyond the underlying architecture of file-sharing and printer-sharing, and he will examine how communications tools such as advanced electronic mail, group schedulers and fax capabilities are being combined to provide users with powerful productivity enhancements. He will also outline distinct network market segments, various user requirements and the issues involved in implementing the best networking solutions to meet users' connectivity needs.

Keiper joined Artisoft early last year as president and chief operating officer. He was named president and chief executive officer in June. Artisoft is the leader in peer-to-peer networking for DOS and Windows environments. The company manufactures a full line of innovative, cost-effective network communications solutions. Prior to joining Artisoft, Keiper was president and chief operating officer of Microage, Inc.

PROGRAM COMMITTEE

JAMES BRENTANO

Senior Strategic Planner
Computer & Telecommunications
Pacific Gas & Electric Company

Brentano is involved in the planning of PG&E's computer and telecommunications strategies. Previously, he was a senior LAN specialist with expertise in Banyan VINES networking.

ROBERT BUCHANAN

Vice President
LANQuest Labs

Buchanan is responsible for managing LANQuest's business strategy and ensuring that the company's network product testing capabilities and test products closely track emerging markets and technologies.

BRENT DORSHKIND

Features Editor
LAN Times

Dorshkind directs feature coverage for *LAN Times'* network management, internetworking, applications, network professional, special report and supplement sections. Previously, he was senior editor with *STACKS: The Network Journal*.

MARK FREUND

Managing Director
SunNetworks, A Sun Microsystems, Inc. Business

Freund heads a new division that focuses on architecting, building and managing the next generation of network computing environments for Fortune 500 corporations worldwide.

ROBERT HARBISON

President
Network Integration Consultants

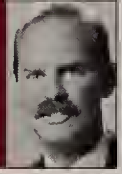
Harbison is an independent network consultant specializing in the design and implementation of LANs, WANs and multiplatform connectivity. He is a contributor to *LAN Technology Magazine* and *Network Computing Magazine*.

JAY MILNE

Analyst/Network Specialist
Chevron Information Technology Company

Milne is responsible for the evaluation and recommendation of PC LAN hardware. He provides consulting services such as system design and optimization to various operating companies within Chevron Industries.

NEIL MYERS



President
Network Associates

Myers consults for leading network vendors such as Microsoft, Novell, NetWorth, Madge Networks and Cubix Corporation. He is a noted author and columnist on network-related topics and industry trends.

PATRICIA SCHNAIDT

Editor-in-Chief
LAN Magazine

In addition to her primary editorial responsibilities, Schnaidt is also the editorial director of *STACKS: The Network Journal*, the only technical magazine for VARs and integrators. She is also the author of *Enterprise-wide Networking*.

BEVERLY SEYFERT

Technology Practice Manager, Applications Development Group
SunNetworks, A Sun Microsystems, Inc. Business

Seyfert is responsible for this consulting division specializing in the design, implementation and management of networks and network applications. Previously, she was director of a consulting group that focused on creating custom applications for network platforms.

VAL SRIBAR

Senior Research Analyst
Meta Group

Sribar is a consultant in the LAN infrastructure, internetworking and bandwidth management areas to internal and outside clients for Meta Group.

THOMAS THIBAULT

President
Thibault Associates, Inc.

Thibault is an expert on across-the-board connectivity of microcomputers and mainframes. Previously, he was vice president of business and systems planning for Wells Fargo Bank's Real Estate Industries Group, San Francisco.

SEMINARS

TUESDAY, APRIL 19

10:00 AM - 11:30 AM

1 Introduction to LANs — Parts I and II

Session Chair: Howard Lubert
President, HEL, Inc.

This session will cover LAN basics. The panel will discuss the fundamental concepts and technologies of LANs. Topics will include an overview of network services and the basics of selecting, installing and managing a LAN.

WHO SHOULD ATTEND
Anyone new to networking.

2 Planning for Interoperability with TCP/IP

Session Chair: Art Wittmann
Systems and Network Manager, University of Wisconsin

TCP/IP is rapidly becoming the lowest common denominator protocol, providing access to a multitude of disparate computing platforms. This session will focus on the advantages of TCP/IP as a universal protocol, particularly in the backbone and platform access arenas, and its limitations — addressing, application compatibility, etc. The discussion will also address implementation strategies, and the pros and cons of various vendor approaches to this protocol.

WHO SHOULD ATTEND
Network managers and planners, IT managers.

3 Choosing the Right Windows

Session Chair: Kristin Marks
Managing Director, Networks Are Our Lives, Inc.

With Windows, Windows for Workgroups and Windows NT to choose from, and Chicago and Cairo looming on the horizon, this panel will help you decide which Microsoft desktop operating system is best for your networking and business needs.

WHO SHOULD ATTEND
Business/network managers.

4 Choosing the Right Server Platform

Session Chair: Neil Myers
President, Network Associates

This session will examine various file server choices, including UNIX, non-Intel servers and EISA vs. ISA. It will cover the common criteria for evaluating servers.

WHO SHOULD ATTEND
Network managers, LAN administrators.

5 Developing Distributed Applications

Session Chair: Chris Loosley
Principal, Database Associates

This seminar is a database session specially designed for network users by the organizers of DB/EXPO 94, May 24-26, Moscone Convention Center, San Francisco.

DB/EXPO 94

Distributed applications are becoming a way of life in today's network environments. This session will explore the design issues of distributed applications. Topics will include data storage and replication, required processes, services and network bandwidth requirements.

WHO SHOULD ATTEND
Intermediate/advanced level application architects and developers.

6 The Business Case for LANs/WANs

Session Chair: Ed Groark
Chairman, Riverbend/US Connect

While there are many technological reasons behind the installation of LANs/WANs, the cost-conscious business environment is starting to focus on the business issues. This session includes the various costs involved and how it will impact the organization. The issues addressed will be how to calculate the costs and benefits of a new LAN/WAN, both soft and hard, and hidden costs. The issues covered will include: calculating return on investment, hidden and soft costs such as training and support, making a business decision as opposed to a technical decision, making an impact on the design of the network.

WHO SHOULD ATTEND
IT managers, network architects and designers.

7 ATM — The Business Issues

Session Chair: John Powers
President, Powers & Company

Asynchronous Transfer Mode (ATM) offers the promise of higher bandwidth communications capable of concurrently carrying data, video and voice-grade traffic. The impact on business activity is far-reaching and could provide users with computer connectivity, telephone and fax communications as well as videoconferencing from a single source carrier. Should businesses move aggressively forward to implement this new technology for performance improvement and cost efficiency, or employ measured restraint as the technology is rolled out? This session will address the business issues and concerns regarding ATM deployment.

WHO SHOULD ATTEND
MIS managers, corporate WAN designers, chief financial officers.

F FUNDAMENTALS
INTEROPERABILITY
S SOFTWARE AND APPLICATIONS
CS CLIENT/SERVER
P PLANNING AND DESIGN
APPLICATION DEVELOPMENT
M MANAGEMENT ISSUES: BUSINESS
A ATM
MANAGEMENT ISSUES: TECHNICAL
E ENTERPRISE
E EMERGING TECHNOLOGIES

SEMINARS

TUESDAY, APRIL 19

10:00 AM - 11:30 AM
Continued from page 15

8 Fault Tolerance

Session Chair: Brent Dorshkind
Features Editor, LAN Times

As mission-critical applications move from mainframes and minicomputers to PC-based LANs, the fault tolerance of the LAN becomes paramount. In response, the LAN community has introduced RAID, mirrored servers, redundant and interruptible power supplies, online backup concentrator modules and more. This seminar will include a discussion of the components available to enhance network fault tolerance and the methods for their implementation.

WHO SHOULD ATTEND
Network planners, designers and others looking to incorporate fault tolerance into their networks.

1:30 PM - 3:00 PM

9 E-Mail Systems Interoperability

Session Chair: Gary Bolles
Editor-in-Chief, Network Computing Magazine

With so many electronic mail systems available today, users are faced with complex problems. How do you send messages between systems? Which exchange formats work the best? This session will explore popular e-mail interchange options such as VIM, MAPI, MHS and XAPIA. It will include a discussion of specific ways to allow e-mail systems to communicate together.

WHO SHOULD ATTEND
IT planners, application developers, network managers and planners.

10 Which is Best — Novell or Microsoft Desktop Operating Systems?

Session Chair: Melanie McMullen
Senior Managing Editor, LAN Magazine

The desktop operating system (OS) wars are in full swing. Find out which OS — Windows, Windows NT or Personal NetWare — is the most suitable for your network and application needs.

WHO SHOULD ATTEND
Business/network managers.

11 Client/Server Tools Update

Session Chair: Mo Shahpar
Senior Vice President, Totally Non-Technical

This session will present an update on the fast-evolving client/server tool market. Panelists will discuss the latest tools for client/server front ends and back ends, as well as emerging client/server trends.

WHO SHOULD ATTEND
Client/server application designers and managers.

12 Backup/Restore Strategies

Session Chair: Jay Milne
Analyst, Network Specialist,
Chevron Information Technology Company

This session will examine the issues surrounding backup/restore strategies. What do you do when you run out of backup capacity? How do you validate your backup and ease the restore process? What about backing up in a mixed platform Internet? What are the hidden costs? What's available today?

WHO SHOULD ATTEND
Network managers, LAN administrators.

13 Implementing Desktop Database Applications on a Network

Session Chair: Bruce Robertson
Senior Technology Editor, Network Computing Magazine

Desktop databases, such as Dbase, Access and Paradox, provide powerful tools for programmers and end users to store and manipulate information. Data storage and access techniques, program implementation and report generation change dramatically when the application supports multiple users. This session will address creating production-class multi-user applications. Topics will include security, data integrity, network traffic and version control.

WHO SHOULD ATTEND
Desktop applications programmers, LAN managers and administrators.

14 Technology and Standards Overview

Session Chair: Mark Freund
Managing Director, SunNetworks

Asynchronous Transfer Mode (ATM) offers the promise of high-speed, bandwidth-on-demand networking by providing a small fixed-length packet (cell) that is transferred between nodes using high-speed switches. This session will describe the ATM packet structure, standards, carriers and carrier access, and switching techniques.

WHO SHOULD ATTEND
General network users, anyone interested in ATM.

15 Strategic Management Platform Selection

Session Chair: Leo Spiegel
Chief Technical Officer, LAN Systems, Inc.

Typical data networks include bridges, routers, WAN links, PCs and servers from multiple vendors. To help users avoid the management headaches of these mixed environments, virtually all network equipment vendors provide the Simple Network Management Protocol (SNMP) with their individual systems. This session will examine the SNMP-compatible platforms available to manage the devices in a heterogeneous environment.

WHO SHOULD ATTEND
Network administrators, managers and others currently evaluating network management platforms.

16

Remote Access Strategies

Session Chair: Val Sribar
Senior Research Analyst, Meta Group

One of the emerging issues in enterprise networking is how to connect nontraditional information workers — telecommuters, the field force, the traveling employee, etc. This session will address both current practices and future directions for providing remote users with access to the enterprise network.

WHO SHOULD ATTEND
Network managers and network management staff.

3:30 PM - 5:00 PM

17

Introduction to Network Applications

Session Chair: Sue Spiner
President, Set Marketing On

It is much more complex to install and manage applications on a LAN than on stand-alone desktops. This session will teach the new network manager how to install and manage Windows, unruly single-user applications and complex network applications. Topics covered will include installation, software distribution, licensing issues and software metering.

WHO SHOULD ATTEND
New network managers.

18

Implementing E-Mail as a Strategic Application

Session Chair: Patricia Schnaidt
Editor-in-Chief, LAN Magazine

E-mail is a strategic application that forms the foundation for messaging, workflow and workgroup computing. This panel discussion will teach you to implement an e-mail system that will provide a messaging foundation capable of scaling from small to large size.

WHO SHOULD ATTEND
Business/network managers.

19

Developing for Multidesktop Environments

Session Chair: Beverly Seyfert
Technology Practice Manager,
Applications Development Group, SunNetworks

Today's networks are no longer made up of simple "look-alike" workstations. Creating applications that work across platforms is becoming a common requirement in the corporate world. This session will examine the specifics of developing for a multiplatform environment. The panel will discuss design and interface issues, identify available products, including RPC, front ends, back ends and CASE tools, and explore the capabilities and limitations of these tools.

WHO SHOULD ATTEND
Applications architects and developers.

20

Reengineering

Session Chair: Michael Light
President, Carolina Business Systems

Reengineering the network often means downsizing legacy computing services. This session will focus on the business aspects of reengineering your network. The panel will focus on such issues as the various strategies used, making a business justification (cost/benefit analysis), security issues and policies, dealing with the allocation and training of personnel and the management changes that need to be made to support the new computing paradigm. Issues covered will include: downsizing, reengineering the network, costs and benefits, and methodology.

WHO SHOULD ATTEND
Corporate IT/local MIS managers.

21

LAN and Desktop Connectivity

Session Chair: Tom Henderson
Vice President, Engineering, UNITEL, Inc.

As LAN applications begin to use more network bandwidth for graphical and multimedia applications, the need for higher-speed desktop LAN connectivity grows. ATM promises to provide the higher bandwidth requirements by using ATM switches and network interface cards to build LANs and campus-wide networks. This session will include a discussion of the components and techniques for building ATM-based LANs and campus-wide networks.

WHO SHOULD ATTEND
LAN designers, administrators and users.

22

Network Performance Analysis and Reliability Testing

Session Chair: Brian McGiffert
Vice President, LANQuest Labs

How do network administrators and managers maximize network performance and keep the network up and running? What hardware and software is needed to get the job done? And once selected, what's the most effective way to configurate and use these products? This session will include a discussion of both the tools and techniques used for network performance analysis and reliability testing.

WHO SHOULD ATTEND
Network managers, administrators, planners and outsource consultants responsible for network optimization and maintenance.

23

Enterprise Messaging Strategies

Session Chair: James Brentano
Senior Strategic Planner,
Pacific Gas & Electric Company

Enterprise messaging is the foundation for a number of critical areas including e-mail interconnectivity, workflow processing and distributed application development. This session will outline the issues, the current products and the future direction in this critical area.

WHO SHOULD ATTEND
IS/IT managers, network planners, application developers, network management staff.

FUNDAMENTALS
INTEROPERABILITY
SOFTWARE AND APPLICATIONS
CLIENT/SERVER
PLANNING AND DESIGN
APPLICATION DEVELOPMENT
MANAGEMENT ISSUES: BUSINESS
ATM
MANAGEMENT ISSUES: TECHNICAL
ENTERPRISE
EMERGING TECHNOLOGIES

SEMINARS

TUESDAY, APRIL 19

2:00 PM - 3:30 PM

Continued from page 17

24 Connecting to the Internet

Session Chair: Eric Stral

Partner, EK&C Partners

The Internet can be both an asset and a liability to a company that connects to it. There are tremendous resources available on and through the Internet. It can extend the reach of your organization's e-mail to practically every government, commercial and educational computer user in the world. On the other hand, it can also open up your organization's internal network to outsiders. This session will discuss both the benefits of connecting to the Internet, as well as the security, regulatory and management implications.

WHO SHOULD ATTEND

IT managers, network planners, LAN/WAN managers and staff.

WEDNESDAY, APRIL 20

8:30 AM - 10:00 AM

25 Introduction to Wide Area Networking and LAN Communications

Session Chair: Howard Lubert

President, HEL, Inc.

You have your LAN set up. Now, how do you extend your LAN's reach? This session will teach you the basics of Wide Area Networking and LAN communications, such as remote access, remote node and dial-out. You will learn how to interconnect your LAN with other LANs, remote users and host systems using such technologies as routers, bridges, remote node, remote access, dial-out communications and SNA.

WHO SHOULD ATTEND

IT managers, network architects, LAN managers and administrators.

26 Integrating Macintosh and PC Networks

Session Chair: Howard Marks

Chief Scientist, Networks Are Our Lives, Inc.

Today's network professionals are commonly faced with a complex, multivendor desktop environment. In particular, the integration of Apple Macintosh and PC networks is a significant networking issue. This session will focus on Macintosh/PC integration approaches at the networking, network operating system and application levels.

WHO SHOULD ATTEND

LAN managers and administrators, network/IT planners.

27 Integrating Imaging and Document Management

Session Chair: Wayne Rash

Contributing Editor, Communications Week

Imaging and document management systems are finally affordable to those who don't have mainframes. Find out how your business can benefit from implementing an image-based system.

WHO SHOULD ATTEND

Business/network managers.

28 Designing Client/Server Applications

Session Chair: Paul Winsberg

Principal, Database Associates

This seminar is a database session specially designed for network users by the organizers of DB/EXPO 94, May 24-26, Moscone Convention Center, San Francisco.

DB/EXPO 94

Client/server tools are popping up everywhere. Yet the proper design of a client/server application is just as important as the tools used. This session will address the issues and practices involved in designing successful client/server applications.

WHO SHOULD ATTEND

Client/server application designers and managers.

29 Capacity Planning for Network Resources

Session Chair: Robert Buchanan

Vice President, LANQuest Labs

As networks change and grow, you should constantly review your infrastructure to make sure it can handle the demands of the network. Why spend the time doing capacity planning? Learn about the tools that can help you predict performance problems.

WHO SHOULD ATTEND

Network managers and planners, system integrators.

30 Developing Messaging-Enabled Applications

Session Chair: Rik Drummond

President, The Drummond Group

Messaging-enabled applications are becoming a reality in the corporate environment. This session will explore the process of developing messaging-enabled applications, including available tools, implementation and support issues, and potential pitfalls.

WHO SHOULD ATTEND

Intermediate/advanced level application developers, LAN/IT managers.

31 Viruses

Session Chair: Cheryl Currid

President, Currid & Company

Who cares about computer viruses? You should. *Information Week* reminds us that "Any event that poses a threat to the integrity and/or availability of our systems and data...is a serious danger." More than annoying-but-harmless computer glitches, viruses are a serious breach of network security that can irreparably destroy data. This session will reveal the tools and strategies available to guard against viruses.

WHO SHOULD ATTEND

Network managers, administrators and consultants responsible for network security.

32 High-Speed Networking Alternatives—ATM, SMDS, Frame Relay

Session Chair: Ray Horak
Executive Vice President, The Lido Organization

Is your existing cable behind the times? Would you like increased performance? Are you familiar with the various alternatives for speeding up your network? Should you consider 100mb/s FDDI/CDDI? What about ATM? This session will explore the numerous new-generation products and discuss solutions from the vendor and user perspective.

WHO SHOULD ATTEND
Network managers and administrators.

11:30 AM - 1:00 PM

33 Interoperability and the AS/400

Session Chair: Robert Harbison
President, Network Integration Consultants

Widespread application availability and integration services enabled the AS/400 to extensively penetrate the corporate environment. With an increasingly larger segment of the user population requiring access to AS/400-based applications, network managers must find a way to integrate this platform into the corporate computing environment. This session will include a discussion of various AS/400 interoperability strategies.

WHO SHOULD ATTEND
AS/400 users, network managers, IT planners.

34 Making Workflow Work for You

Session Chair: Peter Stephenson
Executive Vice President, Sanda International

The emerging field of workflow management is an essential element of reengineering your business process. However, there are different approaches taken by workflow vendors and consultants. Discover which approach is appropriate for your business and how to use workflow to make your business more efficient.

WHO SHOULD ATTEND
Business and IT managers.

35 Overview of NetWare Directory Services

Session Chair: Patrick Corrigan
Managing Director, The Corrigan Group

This session will cover the current state of NetWare Directory Services (NDS). Topics will include improvements, problems, shortcomings and future direction.

WHO SHOULD ATTEND
NetWare users and administrators, system integrators.

36 OOP as a Network Application Development Tool

Session Chair: Dan Spiner
Managing Director, Progressive Strategies

Object-oriented programming (OOP) tools offer a variety of benefits, including rapid prototyping/development, repositories of reusable code and true GUI development. This session will include discussion of the use of OOPLs to develop networked applications. Topics covered will include how OOP differs from more traditional methods of coding, what to look for in an OOPL, implementation techniques and maintenance.

WHO SHOULD ATTEND
Intermediate/advanced application architects and developers.

37 Extending Networks Beyond the Corporate Wall

Session Chair: Rich Adams
Consulting Engineer, Liberty Networks

In today's business environment, the network does not exist only in the confines of the corporate building. The growing number of mobile users requires that the corporation look at its remote access strategies. The trend toward telecommuting by employees is increasing, as is the need for service providers to support their customer base via remote access. What does this mean to the corporation? How does it affect employees? This session will focus on the business issues of telecommuting and remote access and will touch on subjects such as security, justification, remote access strategies and management of telecommuting.

WHO SHOULD ATTEND
Anyone considering or currently using remote access or telecommuting.

38 ATM vs. Fast Ethernet Implementations

Session Chair: Brent Dorshkind
Features Editor, LAN Times

Asynchronous Transfer Mode (ATM) promises to provide 155 Mbps, while the new Fast Ethernet specifications are designed to deliver 100 Mbps. Which is best for your growing LAN needs? Which offers the best migration path from your existing networks? This session will focus on these two new emerging network technologies and what you need to know about them to make the right decisions for your network growth requirements.

WHO SHOULD ATTEND
LAN designers and administrators, high-end users.

39 SNA and LAN Internets

Session Chair: Val Sribar
Senior Research Analyst,
META Group

The two dominant forces in many enterprise networks are the old SNA networks and the emerging packet switched LAN internetworks. This session will include a discussion of the fundamental architectural differences between the two and the implications for coexistence, migration and integration.

WHO SHOULD ATTEND
IT managers, network planners, LAN/WAN managers and staff.

FUNDAMENTALS
INTEROPERABILITY
SOFTWARE AND APPLICATIONS
CLIENT/SERVER
PLANNING AND DESIGN
APPLICATION DEVELOPMENT
MANAGEMENT ISSUES: BUSINESS
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MANAGEMENT ISSUES: TECHNICAL
ENTERPRISE
EMERGING TECHNOLOGIES

SEMINARS

WEDNESDAY, APRIL 20

10:30 AM - 12:00 PM

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40 Multimedia Technologies

Session Chair: Joel Shore
Industry Editor, Computer Reseller News

Multimedia has been discussed at length for several years with much controversy. This session will explore the realities of multimedia today. New solutions and discoveries will be examined in the areas of distributed multimedia networks and multimedia applications. The panel will also discuss the effects of bandwidth and how it relates to multimedia today.

WHO SHOULD ATTEND
Experienced/novice network professionals.

3:30 PM - 5:00 PM

41 Universal Printers

Session Chair: Michael Weiss
President, MWA Consulting

With LANs becoming entrenched as the end user computing platform, network printing is rapidly evolving into a corporate utility. Network professionals are increasingly leveraging new features and functions in today's LAN-based printers to support a wide variety of computing platforms. This session will cover the new capabilities of leading printing platforms and place them in the context of today's heterogeneous computing environments, describing the advantages and limitations of the universal printer approach.

WHO SHOULD ATTEND
LAN managers and administrators, network/IT planners.

42 Workgroup Computing

Session Chair: Leo Spiegel
Chief Technical Officer, LAN Systems, Inc.

While many people have talked about groupware, few have implemented it in strategic applications. This session's panel will highlight the applications for workgroup software and emphasize successful implementations.

WHO SHOULD ATTEND
Business/network managers.

43 Performance Impact of Client/Server Applications on Your Network

Session Chair: Beverly Seyfert
Technology Practice Manager,
Applications Development Group, SunNetworks

The trial project for your client/server applications went well. Now, as you roll the application out corporate-wide, you find it is bringing your network to its knees. What went wrong? This session will help you understand how client/server applications affect the network so you can predict and mitigate the performance impact of client/server applications.

WHO SHOULD ATTEND
Client/server application designers and managers.

44 Fast Net Update

Session Chair: Patrick Dryden
Senior Writer, Communications Week

There are a number of candidates vying for the 100/Mbps market, including FDDI, CDDI, Fast Ethernet, Switched Ethernet and Fast Token Ring. This session will present a comparison of the alternatives and a discussion of implementing a fast network on your system.

WHO SHOULD ATTEND
IT/network managers, system integrators.

45 Stop-Gap Application Gateways

Session Chair: Steve Rabin
President, American Software, Inc.

What is "middleware"? What can it do? How do you implement it? This session will present a discussion of the concept of application gateways, identify the products available for various platforms and provide methods for selecting and implementing a "middleware" solution.

WHO SHOULD ATTEND
IT managers, application developers.

46 The Planning of Migration

Session Chair: Meg Lewis
Managing Director, Technical Planning and
Architecture, Sabre Systems, American Airlines

As a company's needs and requirements change, its network computing environment also changes. The path of migration from one platform to another can often be rocky. This session's panel will discuss which migration strategies and methodologies work and which ones don't, citing specific examples. The costs, including hidden and soft costs, and their impact on the company, will also be discussed. Topics covered will include strategies, methodologies and the costs involved.

WHO SHOULD ATTEND
IT managers, network architects, system designers and consultants specializing in network migrations.

47 Directory Services— The Key to Enterprise Networks

Session Chair: James Brentano
Senior *Strategic Planner,*
Pacific Gas & Electric Company

In some respects, it is the directory that defines the enterprise network. This session will provide an examination of the importance of directory services to users, application developers and network managers. Some of the products currently available will be discussed, as well as future directions for both standards-based (e.g., X.500, DCE directory) and proprietary solutions.

WHO SHOULD ATTEND
IS/IT managers, network planners, application developers, network management staff.

48 Wireless Technologies

Session Chair: Cheryl Currid
President, Currid & Company

Today's network managers are faced with growing problems in the area of connecting computers using cabling. Wireless technology is a possible alternative. This session will explore the products available, how wireless devices are used and the costs associated with using wireless technology.

WHO SHOULD ATTEND
Network professionals interested in alternatives to cabling.

THURSDAY, APRIL 21
8:30 AM - 10:00 AM

49 Desktop-to-Host Interoperability
Session Chair: Dan Spiner
Managing Director, Progressive Strategies

With today's emphasis on client/server and rightsizing, many people forget that most mission-critical corporate data still resides on the mainframe. A key requirement of today's PCs and LANs is to provide access to the various host platforms, data and applications found throughout the enterprise. This session will focus on desktop-to-host interoperability methodologies, ranging from basic terminal emulation and network gateway strategies to peer-to-peer interactions.

WHO SHOULD ATTEND
IT/network planners, data center professionals.

50 Multiple Protocol Stacks on the Desktop
Session Chair: Roosevelt Giles
President, Information Management Systems

With increasing user requirements to access information dispersed across a variety of application and database platforms, desktops are being forced to support multiple sets of protocols. This session will address strategies to support a combination of protocols (TP, IPX, various incarnations of SNA, DECNet, etc.) within the constraints (memory limitations, operating system compatibility, emulation software, etc.) of today's desktop environment.

WHO SHOULD ATTEND
LAN managers and administrators, network managers, IT planners.

51 Frame Relay
Session Chair: Jim Cavanagh
Regional Applications Engineer, Stratacom, Inc.

As you expand beyond your LAN, what technologies should you consider? This session will explore Frame Relay and other alternatives, such as ATM, SMDS, ISDN, and where they fit in the puzzle.

WHO SHOULD ATTEND
IT managers.

52 WAN and Enterprise Connectivity
Session Chair: Robert Harbison
President, Network Integration Consultants

Many carriers have announced plans to implement Asynchronous Transfer Mode (ATM) as the preferred backbone infrastructure. ATM can provide performance improvements, bandwidth on demand and asymmetrical mesh WAN connectivity as well as substantial cost savings over existing technologies. What customer premise equipment will be required to accomplish this new type of wide-area connectivity? Will ATM be capable of handling the multiple protocols that exist in current enterprise network structures? Can ATM support the changing structures of LAN/WAN connectivity? This session will address these questions.

WHO SHOULD ATTEND
LAN/WAN administrators, MIS managers, WAN designers.

53 Network Asset and Configuration Management
Session Chair: Diane Danielle
President, Danielle Associates

LAN professionals are too often in the dark when it comes to minor network details such as assets and configurations. What is on the network, and how is it configured? If you can't answer these questions, upgrading hardware and software, tuning and optimizing, and other chores can become network nightmares. This session will cover tools and strategies for effective asset and configuration management, including electronic software distribution and version management.

WHO SHOULD ATTEND
Network managers, administrators and outside contractors responsible for managing network hardware, software and system configuration.

54 Security
Session Chair: Tom Hadden
President, Synergistics Networking Solutions

Enterprise networks generally consist of a multitude of heterogeneous components distributed across many sites. This structure has significant implications for the security of the network and the resources attached to it. This session will include a discussion of the need for an enterprise security architecture as well as some of the components of that architecture.

WHO SHOULD ATTEND
IT managers, network planners, LAN/WAN managers and staff.

55 Supporting Multimedia on Your Network
Session Chair: Thomas Thibault
President/Founder, Thibault & Associates

This session will focus on the actual experiences of implementing multimedia on a network. The speakers will discuss specific problems with network performance, applications, installation and cost considerations.

WHO SHOULD ATTEND
Network professionals currently using or planning to implement multimedia.

56 Nomadic Computing
Session Chair: Joe Caruso
Manager, Office Strategy, SmithKline Beecham

The number of mobile professionals is growing exponentially. People are moving data from the field, home and office. With new technology you have several alternatives and issues to consider. This session will provide a foundation on which to base your mobile computing decisions. Hardware and software solutions and the costs to consider with these solutions will be discussed.

WHO SHOULD ATTEND
Network managers, users of mobile computing products.

FUNDAMENTALS
INTEROPERABILITY
SOFTWARE AND APPLICATIONS
CLIENT/SERVER
PLANNING AND DESIGN
APPLICATION DEVELOPMENT
MANAGEMENT ISSUES: BUSINESS
ATM
MANAGEMENT ISSUES: TECHNICAL
ENTERPRISE
EMERGING TECHNOLOGIES

SEMINARS

THURSDAY, APRIL 21
11:30 AM - 1:00 PM

57 Multivendor Database Interoperability— SQL and Legacy Systems
Session Chair: Robert Gallagher
Senior Database Analyst, PC Week

Databases have emerged as one of the key components of strategic client/server and rightsizing initiatives. However, the existence of critical data on a variety of platforms throughout the enterprise presents a significant challenge to IT planners striving to empower users with access to all relevant corporate resources. This session will focus on interoperability between legacy systems containing large amounts of mission-critical information and today's distributed database, SQL platforms.

WHO SHOULD ATTEND
IT/network planners, application developers.

58 NetWare 3.x Optimization
Session Chair: Jay Milne
Analyst/Network Specialist,
Chevron Information Technology Company

This session is for users of NetWare 3.x. How can you get the most out of your current system? What are some alternatives for expansion?

WHO SHOULD ATTEND
NetWare 3.x users, LAN administrators.

59 Training as a Business Decision
Session Chair: Steve Kalman
President, Esquire Micro Consultants

As LAN technology becomes more prevalent in corporations, appearing on desktops and in remote locations and providing critical applications, the need for training has increased. Managers are faced with meeting the increased need for training while budgets are being decreased. Topics covered will include the cost-effectiveness of training, training methods, in-house vs. external sources of training, dealing with a limited training budget and the need for certification.

WHO SHOULD ATTEND
IT managers, anyone responsible for allocating funds for training.

60 ATM— Interoperability with Existing Technology
Session Chair: Roosevelt Giles
President, Information Management Systems

As carriers develop communications backbones based on ATM technology, how will existing point-to-point, X.25 and Frame Relay technologies be handled? Will the ATM carrier networks support direct data streams originating from other communications technologies or will the customer premise equipment need to be converted to ATM-based products? This session will examine the state-of-the-art ATM switches and the levels of interoperability they provide with existing communications services.

WHO SHOULD ATTEND
LAN/WAN designers, MIS managers, high-end users, LAN/WAN administrators.

61 Optimizing Windows on a LAN
Session Chair: Ethan Wilansky
Network Manager, US Generating Company

Although it's the user interface of choice for Intel-based microcomputers, Microsoft Windows still stymies a lot of network managers. For instance, many sites have users load Windows from their local hard drives, which is a waste of network hardware and management resources. This session will detail a Windows installation on a NetWare network and a configuration strategy that is easy on managers and provides excellent performance and flexibility for the end user.

WHO SHOULD ATTEND
Network managers, administrators and consultants who must support Windows users on a LAN.

62 Patches, Fixes and NetWare Versions
Session Chair: Charles Hall
Consultant, Datacomm Networking Technologies

When users find bugs in Novell's operating system, the company is usually quick to respond with a patch that addresses the specific problem. Although the OS is eventually revised to include these patches, many sites continue to run earlier versions of NetWare. This session will focus on patches for common OS-specific problems in NetWare versions 3.11 and 2.2.

WHO SHOULD ATTEND
NetWare users directly responsible for network OS maintenance and upgrades.

63 Networking UNIX Workstations to the Enterprise
Session Chair: Dave Brambert
Senior Editor, LAN Magazine

This session will address the issues involved in the integration of UNIX workstations into the enterprise network. The UNIX workstation as both a client on the network and as a shared client will be discussed.

WHO SHOULD ATTEND
Network managers and network management staff.

64 Storage Management
Session Chair: Andy Robson
Vice President, Set Marketing On

The issue of storage is a consistent nemesis to the LAN manager. With today's technology, you have several alternatives and solutions. As a manager, you need to be aware of these alternatives and how to use them to your advantage. Bring your problems and questions.

WHO SHOULD ATTEND
Network managers and administrators.

Conference Program sessions are subject to change without notice.

HOTEL AND TRAVEL SAVINGS

EXCLUSIVELY FOR NETWORKS EXPO ATTENDEES

Blenheim Travel Services, Inc. (BTSI), the official travel agency for Networks Expo San Francisco, has made special arrangements with many of the the city's finest hotels to offer substantially reduced rates. While some of the hotels are within walking distance of the Moscone Convention Center, complimentary round-trip shuttle bus service will be available between the official hotels and the show.

CHOOSE FROM THE FOLLOWING OFFICIAL HOTELS:

	Special Rates Single/Double		Distance from Moscone Convention Center
Headquarters Hotel			
SAN FRANCISCO HILTON & TOWERS, *333 O'Farrell Street*	$140 to $200 *		5 blocks
Additional Hotels			
THE HANDLERY UNION SQUARE HOTEL, *351 Geary Street*	$88	$88	7 blocks
MONTICELLO INN UNION SQUARE, *127 Ellis Street*	$99	$99	5 blocks
GRAND HYATT, *One Union Square at 345 Stockton Street*	$140	$140	6 blocks
THE PAN PACIFIC HOTEL, *500 Post Street*	$155	$155	8 blocks
PARC FIFTY FIVE, *55 Cyril Magnin*	$123 to $147 *		4 blocks
PRESCOTT HOTEL, *545 Post Street*	$129	$129	10 blocks
VILLA FLORENCE, *255 Powell Street*	$114	$114	6 blocks

All rates are per night, per room and do not reflect 11% daily hotel occupancy tax (subject to change). Rates are exclusive through BTSI and in effect until March 10 (providing rooms are still available). Early booking is strongly suggested to ensure choice of hotels and special rates. A hotel and travel request form is provided for your convenience. All changes and cancellations should be made directly through BTSI.

AIRLINE SAVINGS

In addition to discounted hotel rates, BTSI has teamed up with the official airlines — American Airlines, United Airlines and Continental Airlines — to offer special round-trip discounts. Advance booking may be necessary. For immediate reservations or additional information, call BTSI at 800-829-2281 (in the U.S. and Canada) or 201-346-0300. Reservations may also be made by completing and mailing/faxing the Hotel and Travel Request Form.

** Rates vary depending upon availability and room category.*

QUESTIONS ?

Call BLENHEIM TRAVEL SERVICES, INC. at 800-829-2281 (in the U.S. and Canada) or 201-346-0300. Fax: 201-346-1113.

NETWORKS EXPO SAN FRANCISCO '94

HOTEL AND TRAVEL REQUEST FORM

BLENHEIM
Travel Services, Inc.

CLIP & MAIL/FAX TO:
Blenheim Travel Services, Inc.
Fort Lee Executive Park
One Executive Drive
Fort Lee, NJ 07024
Fax: 201-346-1113

Please type or print. Use one form per person; photocopy if necessary. Credit card information is necessary to guarantee hotel reservations and issue airline tickets. Incomplete forms will not be processed. Upon receipt of this form you will be promptly contacted.

DO NOT MAIL THIS FORM WITH YOUR SHOW BADGE REGISTRATION FORM.

Traveler's Name

Company Name

Company Address

City State Zip Code

Country

( ) ( )
Telephone Fax

HOTEL INFORMATION

1st Choice ____________ 2nd Choice ____________
3rd Choice ____________ 4th Choice ____________
Arrival Date ____________ Departure Date ____________

ROOM TYPE
☐ Single *(1 person, 1 bed)* ☐ Double *(2 people, 1 bed)* ☐ Twin *(2 people, 2 beds)*

Special Request ____________

Credit Card Guarantee:
Type ________ Number ____________ Exp. ________

FLIGHT INFORMATION

Departure Flight ____________ Return Flight ____________
Date ____________ Date ____________
City/Airport ____________ City/Airport ____________
Approx. Dep. Time ____________ Approx. Dep. Time ____________
Airline ____________ Airline ____________
Seating ____________ Seating ____________
Special Request ____________

NSF0269A

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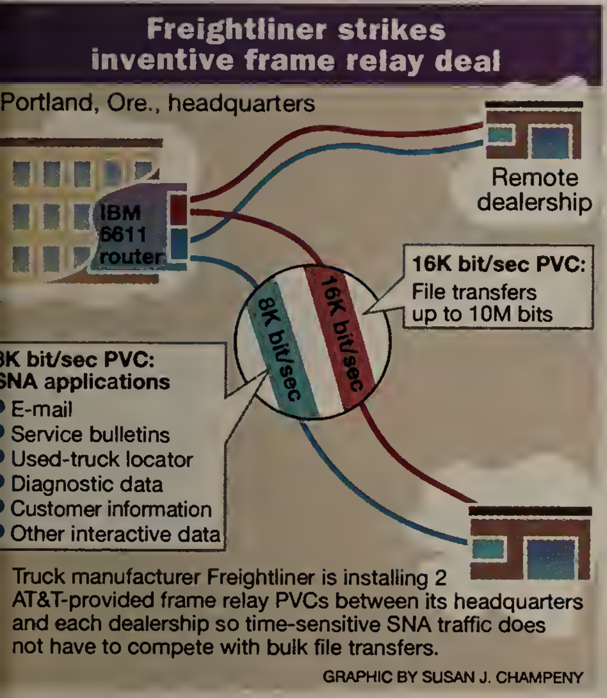
AT&T helps trucking firm deal with SNA over frame relay

Vill use 2 PVCs to carry traffic between dealer sites and headquarters.

Y DAVID ROHDE

Portland, Ore.

Bryan Paxson thinks he's found a ay to perform multimegabit file transers over low-speed frame relay connections without disrupting other trafc, especially time-sensitive SNA data ibject to session time-outs.



Freightliner strikes inventive frame relay deal

Truck manufacturer Freightliner is installing 2 AT&T-provided frame relay PVCs between its headquarters and each dealership so time-sensitive SNA traffic does not have to compete with bulk file transfers.

GRAPHIC BY SUSAN J. CHAMPENEY

Paxson, manager of communicaons for Freightliner Corp. here, is set to install an AT&T frame relay network that would link the giant truck manufacturer with as many as 250 dealers nationwide. The frame relay network will supplement, then eventually replace, the company's existing private-line net.

In an unusual move, AT&T will install two permanent virtual circuits (PVC) between Freightliner's headquarters and each dealer site, Paxson said.

One 8K bit/sec PVC will carry interactive Systems Network Architecture traffic from diagnostic, customer information, electronic mail and other host-based applications. The other 16K bit/sec link will carry one-way traffic, such as file transfers.

Doubling the number of PVCs will add only 1%, or about $2,000 a month, to the cost of the entire net, Paxson said.

AT&T suggested the arrangement to rectify a potential difficulty with using frame relay in an SNA-based network like Freightliner's.

Most truck dealers are small operations that, for most applications, require committed information rates (CIR) of only 8K or 16K bit/sec.

But in testing the frame relay service with AT&T and several router vendors, Paxson found that file transfers of up to 10M bits would cause delays of up to 60 seconds for other SNA traffic — enough to time out 3270 sessions.

So AT&T suggested including the additional logical link to handle the file transfers. Such a move makes particular sense in an SNA environment such as Freightliner's, said Thomas Jones, president of the New Venture Directions, Inc. consultancy in McLean, Va., and former president of the Frame Relay Forum.

The key to attempting this dual-PVC arrangement is to make sure the routers in the network can consistently distinguish between file transfers and other traffic and put them in separate queues, Jones said.

For Paxson, moving large amounts of data rapidly is crucial because service history and repair information in the trucking industry is voluminous.

For example, Freightliner's new

See **Frame relay**, *page 24*

BRIEFS

LCI International, Inc. of Dublin, Ohio, has selected a **Newbridge Networks Corp.** platform for its new FramePlus frame relay offering. The interexchange carrier's network will combine Newbridge 3600 MainStreet bandwidth managers and 36120 MainStreet Packet Transfer Exchanges using frame relay engine cards. LCI, traditionally known as a regional carrier in the Midwest, now has 372 points of presence across the country, said Scott Booth, senior manager of data services.

Sprint Corp. has named three new presidents of its **United Telephone** and **Centel** local telephone companies. J. Darrell Kelley was named to head both Sprint/United Telephone-Florida and Sprint/Centel-Florida, replacing Fred Lawrence. Randy Osler was named to head Sprint/United Telephone-North Central, serving Ohio and Indiana. Steve McMahon was named to head Sprint/United Telephone-Northwest, which serves Oregon and Washington.

US West, Inc., has established a unit to develop interactive advertising and promotion services. Called **Interactive Video Enterprises, Inc.**, the unit will be a subsidiary of US West Marketing Re-sources, the regional Bell holding company's nonregulated directory and database marketing company.

AT&T has announced the CDPD Applications Development Kit to spur the development of wireless data applications for **Cellular Digital Packet Data (CDPD)** nets. The kit houses a miniature configuration of the AT&T CDPD net infrastructure in one cabinet, and the software complies with Version 1.0 of the CDPD standard.

Wireless service providers **ARDIS Co.** and **RAM Mobile Data** are both working with **Apple Computer, Inc.** to bring two-way wireless communications to the Apple Newton family of personal digital assistants (PDA). The companies said they are considering equipping Newtons with a wireless version of NewtonMail, the PDA's mail service that currently requires a wired connection to the host.

GTE Telecommunication Services and **IBM Networking Software Division** said they will jointly provide a net management system that lets wireless carriers monitor and control their nets from a single integrated management screen. The system will combine IBM's NetView/6000 and GTE's SmartAlert Real-Time Analysis System.

Microsoft Corp. and **Tele-Communications, Inc. (TCI)** last week announced they will jointly develop a new cable television net about personal computers. The cable net will include magazine-format shows. TCI will deliver the net using digital compression technology and set-top digital devices, but cable companies will have the option of carrying it over their current analog systems.

Infonet teams up for new software distribution service

BY BILL BURCH

Washington, D.C.

Installing new software on end-users' desktops should get easier later this year when two microcomputer service companies team with Infonet Services Corp. to launch electronic software distribution services.

Corporate Software, Inc. of Canton, Mass., and Software Spectrum, Inc. of Garland, Texas, plan to modernize software distribution and support by allowing managers to remotely check desktop personal computer configurations, order software and have it installed remotely, and monitor system operations.

With the service, customers can download software to a local Microsoft Corp. Hermes systems management server running on a Windows NT Advanced Server. Transport will initially rely on Infonet's Transmission Control Protocol/Internet Protocol service, although X.25 support is planned, as well, according to an Infonet spokesman.

From the server, software can travel over local-area networks to desktop PCs running Windows NT Version 3.1 or later; supported LANs will include Novell, Inc.'s NetWare.

Launch of the software distribution services hinges on Microsoft's release of its Hermes systems management server, which includes software distribution and inventory control functions. Hermes is due out by the end of the second quarter, said Rich Barth, Microsoft's systems management product manager.

> *"Installing a Windows application today is basically a hands-on activity. It'll be interesting to see whether [electronic software distribution via Hermes] can be done as elegantly as the advertising implies."*
>
> A Hermes beta-site user

Corporate Software pledges that its electronic software distribution service will be available within 90 days of Herme's release, while Software Spectrum will have its version available by year end.

With electronic software distribution, Corporate Software and Software Spectrum likely will be targeting large campus environments and corporations with multiple small branch offices, according to John Morency, an analyst with Strategic Networks Consulting, Inc. in Rockland, Mass.

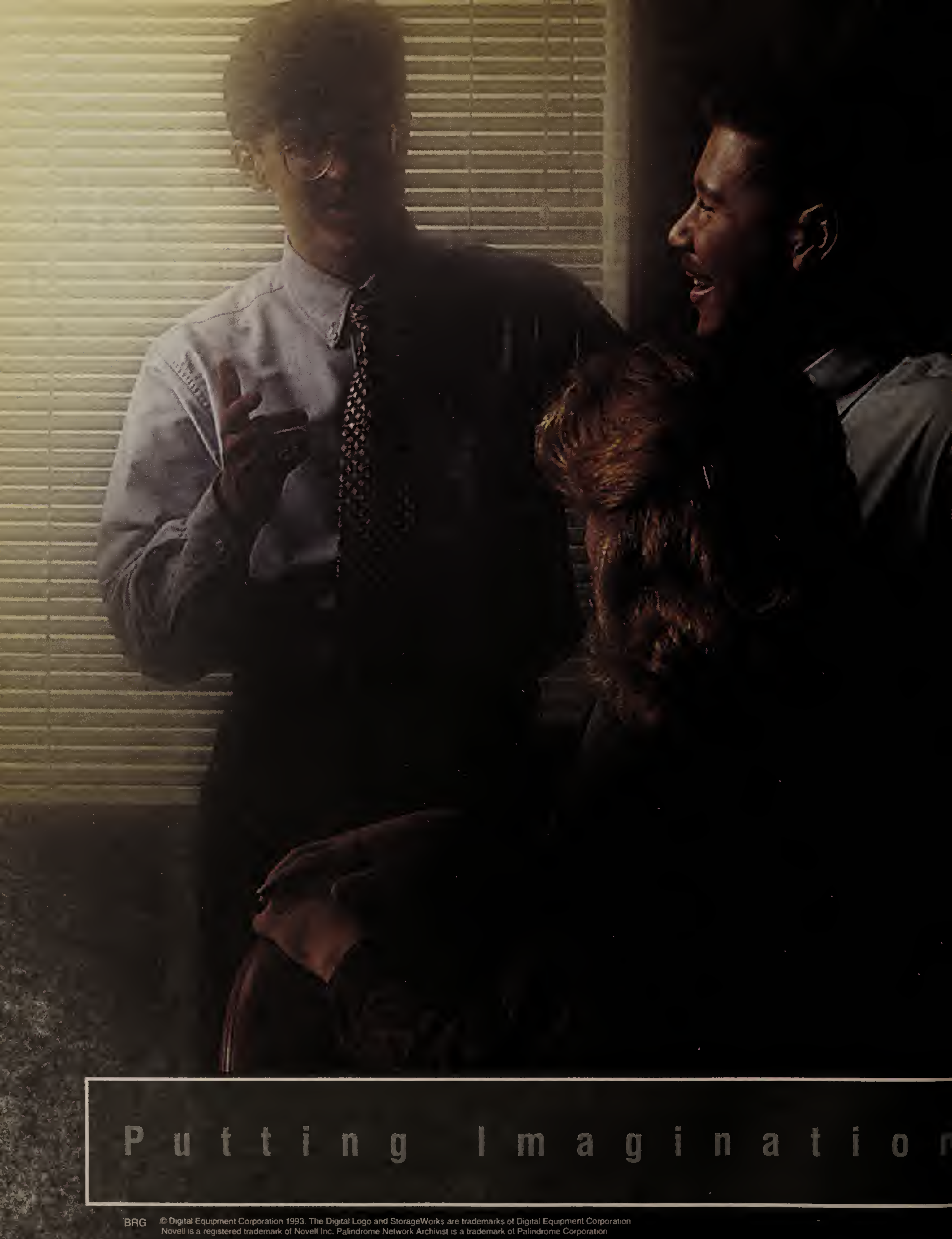
However, the firms may have problems testing their offerings prior to launch, he said.

In its machine room, Microsoft currently has roughly 1,200 Windows NT servers supporting about 30,000 desktops, so the company can do some testing in-house, Morency said. But to test the Hermes server against the full range of user applications, Microsoft would have to rely on beta sites, and users won't be willing to commit their organization's resources for a full test, he predicted.

That has one Hermes beta user skeptical that the electronic software distribution service will work as advertised. "You have to run it through its paces and make sure it's interoperable with your standard applications," said the user who requested anonymity. "Nobody can do that externally."

Service charges are also up in the air. Corporate Software plans to price the offering on an individual case base, taking into account such details as the installed equipment base and the number of data links currently available.

Such custom pricing sounds expensive to the Hermes beta user, who believes service providers will have to come up with some compelling new applications to interest users in the service. He is more interested in Hermes' network management potential than its electronic software distribution.



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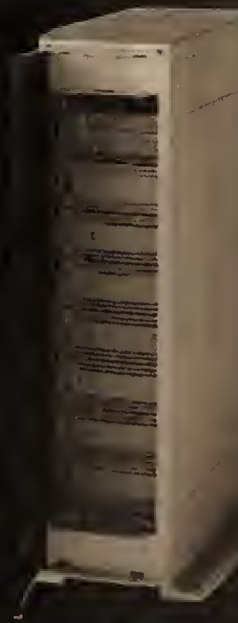

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RATE & TARIFF MONITOR

by Eric Paulak

Who says the big boys get all the breaks?

Long-distance carriers are pushing contract tariffs as a way to lock you in as a customer for two or three years. Consultants are pushing contract tariffs as a way to save money. Either the two groups have gotten in bed together, or you really can get a good deal out of a contract. A little number crunching says it's the latter.

While contracts are mostly geared toward the biggest users, those with at least $100,000 a month in usage, there are some deals that even small businesses can afford.

Take, for example, AT&T's Contract Tariff 708 — a Megacom Plus and T-1 local access deal. It requires a commitment of $10,000 a month for 36 months. In return, AT&T offers Megacom Plus rates for switched access at $.1275 for the first 30 seconds and $.0255 for each six seconds thereafter. Dedicated access calls cost $.084 for the first 30 seconds and $.0168 for each six seconds thereafter.

With a $10,000 volume commitment, you get a 15% discount, and for signing a 36-month term agreement, you get an additional 11% discount. The only thing is that you don't have to sign a contract tariff to get these rates. They're the same rates listed in AT&T's public tariff, FCC #1!

So why sign a contract? Signing bonuses and promotions. With Tariff 708, for example, AT&T waives all installation charges, which can cost up to $1,000 a site for Megacom Plus. Plus, you get usage credits of as much as $109,000, based on your volume of 800, international and domestic traffic. That's a 30% discount on top of the other discounts for which you would already qualify.

MCI's contracts — called Special Customer Arrangements (SCA) — start at about $36,000 a month, with a 24-month commitment.

For MCI's SCA Type 4, Number 36, for example, you get Vnet, 800, Vision and dedicated access services with their associated standard term and volume discounts. You also get a onetime credit of as much as $37,500 in the thirteenth month of service. That comes out to an additional 4.3% discount.

MCI's requirements: $360,000 a year in domestic traffic and $75,000 a year in international traffic for two years.

Sprint also offers contract deals but is not required to file tariffs for them, so you'll have to negotiate to get actual prices. Expect the types of deals to be similar and the rates a little lower than those of AT&T or MCI.

Contract tariffs do have caveats that disqualify some customers from participating or set you up for penalties if you fall short of your commitment.

MCI's SCA Type 4, Number 36 requires that you use MCI for at least 95% of all your traffic, and no more than 25% of your total minutes can be at night/weekend rates. Another contract requires that a certain percentage of your volume be to Hong Kong.

If you fall short of your commitment, MCI charges the difference in the shortfall, plus 15%. With AT&T, if you quit your deal, you're liable for the remainder of your contracted commitment.

However, if you meet all the requirements of a contract and you're within a 90-day window of the original filing, you can get that exact deal from either AT&T or MCI. Otherwise, you can always use the original filing as a starting point. And there are a lot of points to start with. AT&T first offered "contract deals" under FCC #1 in 1992, and it is now up to contract #1459. MCI first tariffed its contracts last year and is nearing 600.

Most of these deals are for large volumes, but at least one-quarter of them have commitment levels of less than $100,000 a month. And many of MCI's SCA Type 4s start at $50,000 a month. So if you're considering a contract tariff, the best place to start is with the deals already negotiated and filed. There's something there for just about everyone.

➙ Paulak is associate publisher for the Center for Communications Management Information in Rockville, Md., a provider of rate and tariff information. He can be reached at (301) 816-8950, Ext. 327.

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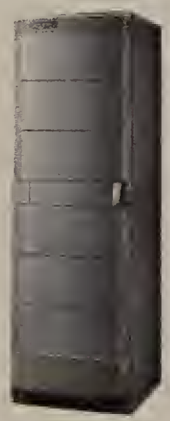

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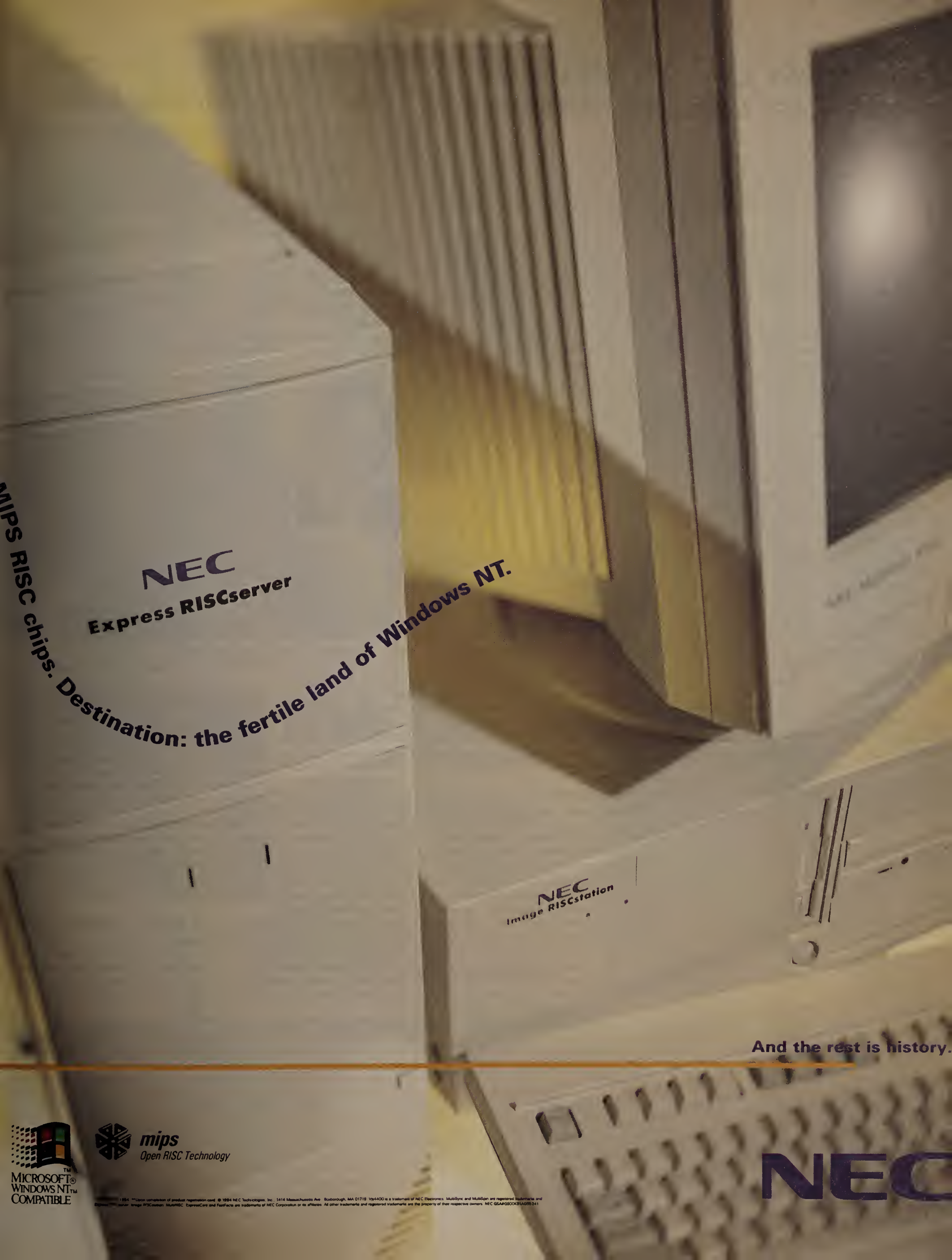
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AT&T service gives business users direct access to Internet resources

BY JOANIE WEXLER

Basking Ridge, N.J.

Starting tomorrow, AT&T business customers looking to tap Internet resources will be able to get access to the global information network bundled into their AT&T service contracts.

The carrier is turning on a nationwide Internet gateway service, called the Internet Connectivity Option (ICO), that is accessible from its InterSpan frame relay net or its dial-up 950 Information Access Service.

Previously, AT&T customers had to seek out separate, regional Internet access providers, which could complicate net operation and management by requiring companies to install disparate premises equipment and deal with bills and account teams from multiple vendors, said Lov Kher, AT&T product manager.

"This will have appeal because most Internet access today is a cottage industry," agreed Joe Noel, general manager of telecommunications research at IntelliQuest, Inc. in Austin, Texas.

> **"This will have appeal because most Internet access today is a cottage industry. Users must deal with gateway providers into regional networks, and the access doesn't work well."**

"Users must deal with gateway providers into regional networks, and the access doesn't work well. It's a pain for most network managers. Being able to off-load this and the corresponding net management to AT&T should make net managers happy," he said.

One early customer that intends to make use of the dial-up option is LegiTech, Inc., a Sacramento, Calif.-based firm that provides on-line status and tracking of legislative bills for state and local government, lobbyists, trade associations and others who want to keep abreast of legislative activity.

The company is considering the Internet initially more for giving customers access to its on-line service than for its own use, said Stephanie Munzinger, sales and marketing manager. "Most of our customers have an Internet connection; we're hoping our Internet link will let them get to us via Internet instead of making a toll call."

With the dial-up option, customers pay a flat monthly fee per user identification number, plus usage. Companies will pay $25 per month for each user accessing the Internet via Telnet and $35 per month for each user employing the Serial Link Internet Protocol. Firms would then pay for total usage priced according to a committed monthly usage rate.

For frame relay access, companies can piggyback the Internet link on an existing frame relay port in their network or dedicate a full port at a speed of their choice. Either way, they must dedicate a frame relay permanent virtual circuit (PVC) for Internet transport and pay the full PVC price.

Frame relay-based customers pay a onetime $1,000 installation charge, then a monthly recurring gateway charge of at least $550 per month, depending on the committed information rate selected.

AT&T competitor Sprint Corp. offers Internet access as a commercial service via dedicated fractional T-1 links. A minimum 56K bit/sec Internet access link costs $1,000 a month, while full T-1 access is priced at $2,700 a month. Sprint will also install premises equipment for an extra charge.

MCI Communications Corp. offers Internet services through its MCI Mail gateway only, although the carrier said it is considering other services.

As part of the ICO rollout, AT&T has partnered with database service provider Online Computer Library Center, Inc. (OCLC). Customers that sign up for ICO frame relay service before June 15 can receive a two-month subscription to OCLC's The FirstSearch Catalog, a 34-database service delivered across the Internet that covers a broad range of general topics.

AT&T will also waive the onetime installation charge and monthly access charge for two months for users signing up by that date for PVCs running up to 32K bit/sec.

✆AT&T: (800) 248-3632.

Truck

Continued from page 17

automated ServicePro system — containing service bulletins, recall information, parts literature and repair history on individual vehicles — is so huge that it requires seven disks of data when provided to dealers on CD-ROM.

"The problem with the trucking industry is that most trucks are custom-built with a variety of components," Paxson said.

When a truck pulls in for maintenance when it's on the road, the dealer typically has to access a remote database to gather data on the truck's history and service requirements, he said.

Dual PVCs are not the only way to handle this kind of mixed SNA terminal-to-host situation, said Kevin Brand, AT&T's InterSpan frame relay product manager in Plainfield, N.J. While many users on the network can justify higher CIRs, limiting the size of file-transfer "windows" held by the router buffers could be enough to speed interactive traffic over the same PVC.

In fact, some Freightliner dealers are much bigger than others and may routinely require heftier data channels than the others, Paxson said. One Freightliner dealer in Indianapolis has 170 service bays.

"We'll turn up the throttle as needed, based on dealer size and requirements," Paxson said.

The first Freightliner dealer is expected to go on the frame relay network in June, with nationwide rollout taking about 18 months, Paxson said. Not surprisingly, because of its SNA background, the company selected IBM 6611 routers as opposed to those offered by 3Com Corp. and Cisco Systems, Inc.

Freightliner's existing network is a multistar arrangement based entirely on leased lines. It consists of 56K bit/sec digital lines from the company's headquarters located here out to several regional Parts Distribution Centers, then multidrop analog lines out to each dealer.

The dealers typically use 14.4K bit/sec modems with IBM 3174 cluster controllers to get and send information.

Not only will frame relay be somewhat less costly than the leased-line network, but it should also provide greater flexibility.

"That puts us in a position to do software distribution" over the 16K file-transfer connections, he said.

And although the frame relay network is not designed to be fully meshed, the company will consider ordering connections between any two dealers who request them. ☒

Subcommittee gives green light to key telecom bills

Markey's legislation gets several amendments.

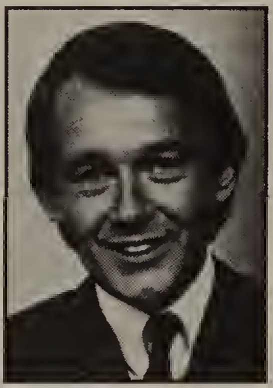
BY ELLEN MESSMER
AND DAVID ROHDE

Washington, D.C.

Following approval by a House subcommittee, two landmark telecommunications bills appear to be headed for a vote by the full House as early as this summer.

At that point, however, some predict the bills will face opposition from free-trade advocates over domestic content language.

The Antitrust Reform Act of 1993, a bipartisan legislation introduced by Rep. John Dingell (D-Mich.), would open the door for the regional Bell holding companies to provide long-distance and manufacture net equipment.


MARKEY

The National Communications Competition and Information Infrastructure Act of 1993, introduced by Edward Markey (D-Mass.), aims to promote local- loop competition by lifting the cross-ownership ban on cable television and telephone companies. It also seeks to ensure open access in everything from switches to telephone poles (*NW,* Nov. 29, 1993, page 1).

After receiving fast-track treatment by subcommittee members, the bills face their next round of scrutiny in the Committee on Energy and Commerce before going to the House floor for a full vote.

At the full committee level, U.S. Trade Representative Mickey Kantor is expected to warn that other countries would view the Brooks-Dingell bill as violating the General Agreement on Tariffs and Trade and the North American Free Trade Agreement.

The bill requires that the RBHCs use at least 60% domestic parts in any manufacturing operation they establish.

UNFAIR ADVANTAGE

Backers of the Antitrust Reform Act (H.R. 3626) say it will increase competition in long distance, but critics assert it could give the Bell companies, which still hold monopoly power in most local services, an unfair advantage. Dingell's bill was approved by the House Telecommunications and Finance Subcommittee without changes.

The Markey bill (H.R. 3636) did undergo change and gained, among other provisions, a new section that would require the Federal Communications Commission to promote advanced telecommunications services for educational and health care institutions, as well as public libraries, by the year 2000.

The modifications to the Markey bill would require the FCC to set up preferential tariff rates for schools, hospitals and libraries, and establish interoperability and functional standards for advanced services.

"This legislation will pave the way for the much- anticipated Information Superhighway," Markey said.

CRITICAL INTERFACES

A new section was also added that requires the FCC to identify "critical interfaces" for linking set-top boxes and other devices used in homes and businesses to telecommunications networks for delivery of interactive services. The goal is to ensure interoperability and a range of equipment options for customers.

In addition, the subcommittee eliminated the so-called 25%/75% proviso, which would have required telephone companies offering cable service to make 75% of cable bandwidth available to competitors.

"This change reflects that it's not in the ratepayer's interest to build a platform that may go unused," Markey said.

A number of amendments offered by Rep. Rick Boucher (D-Va.) were adopted.

One would require large phone companies to sell voice mail, call waiting, call forwarding services and the like to smaller companies to package for resale.

"This requires large telephone companies to share their infrastructure with small companies that lack economies o scale," Boucher said, adding that consumers would ultimately benefit.

Danny Weitzner, policy analyst with the Electronic Frontier Foundation said he was pleased that the legislation's open network platform section emerged intact in the final version of th bill. ☒

Meanwhile, in the Senate...

Hearings on S. 1822, the Senate telecommunications reform bill sponsored by Sen. Ernest Hollings (D-S.C.), are scheduled to continue this week in the Senate Commerce Committee. No votes have been taken on the bill as of yet.

The bill would allow the RBHCs to enter the long-distance market only after they have "eliminated the barriers to competition and interconnection" and "faced competition for local telephone service."

Comments?

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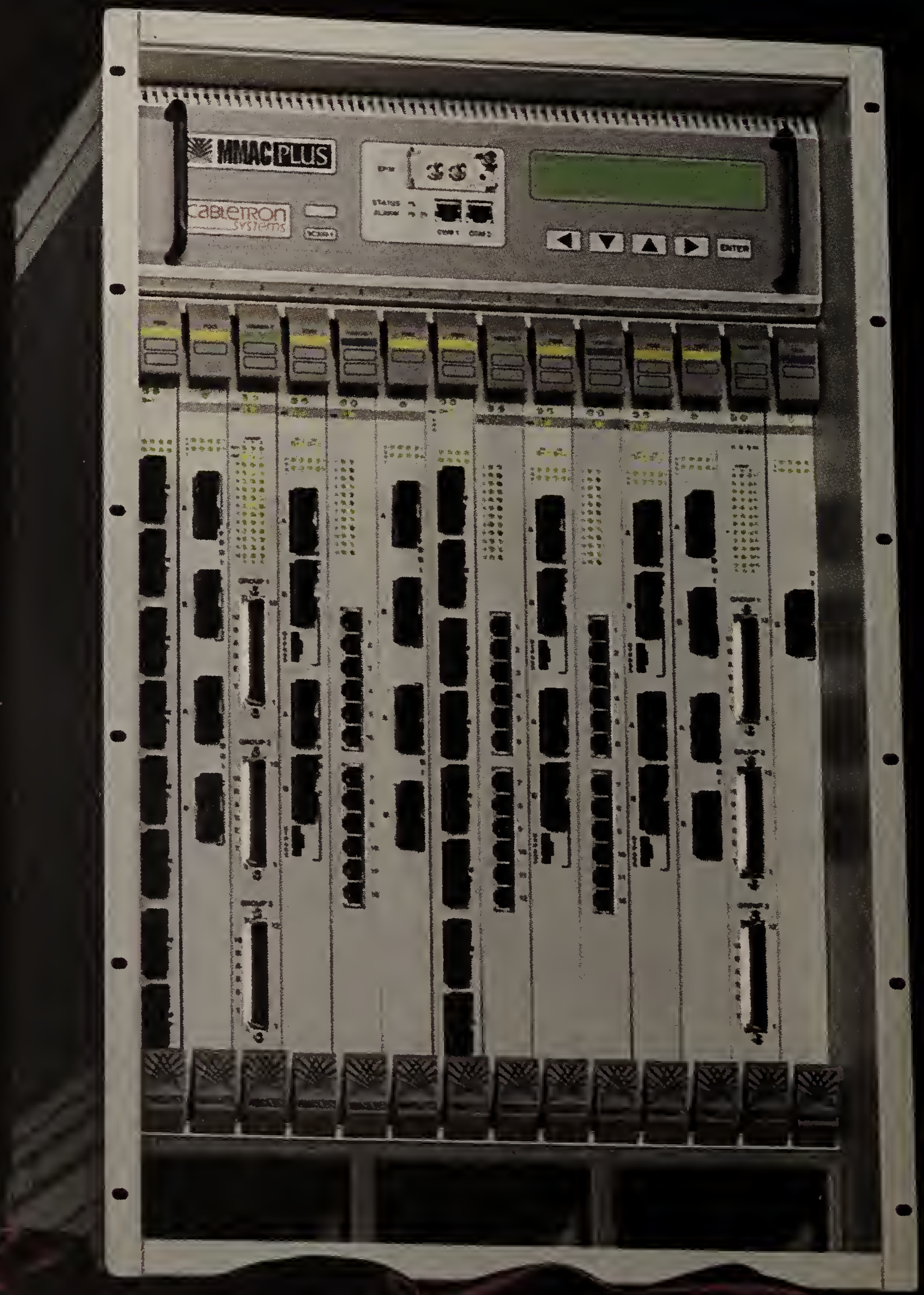

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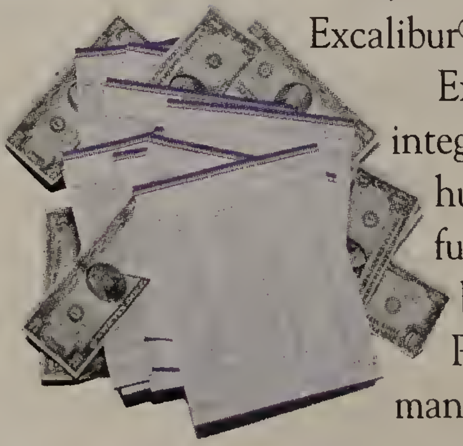
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BRIEFS

Gupta Corp., based in Menlo Park, Calif., last week said it will develop an enhanced version of its client-based SQLWindows application development tool with support for **Novell, Inc.'s Tuxedo transaction monitor.** The product will enter beta testing in the second quarter, with general availability slated for the third quarter. Pricing was not available.

Gupta: (415) 321-9500.

IntelliCorp, Inc. announced earlier this month availability of Object Management Workbench, an **object-oriented design and analysis** tool set. The software uses prototyping and rapid application development techniques that provide feedback from users to developers during the design process. The tool set, which can be used with the company's Kappa visual programming environment, can be used to build applications with access to mainstream SQL-based database management systems. A single license costs $10,995, while a design-only version costs $6,000 per developer.

IntelliCorp: (415) 965-5500.

Control Data Systems, Inc. said it began shipping a graphical user interface-based **X.500 directory user agent** for its MailHub electronic messaging software. Called aXess500, the software allows nontechnical users access to distributed information stored in the corporate X.500 directory. The directory would include such information as electronic mail addresses, phone numbers and fax numbers.

The aXess500 software will be offered as an option to MailHub for $50 to $150 per user. It is scheduled to ship during the second quarter.

Control Data: (612) 482-6736.

Documentum, Inc. of Pleasanton, Calif., has signed a deal with **Digital Equipment Corp.** to port Documentum's document-management software to computers based on Digital's Alpha processor. The companies hope to release versions of Documentum's Enterprise Document Management System for Alpha-based systems running OSF/1 Unix and Windows NT by year end.

Documentum's software is available for Sun Microsystems, Inc. Solaris and Hewlett-Packard Co. HP-UX platforms as servers, as well as for Windows, Apple Computer, Inc. Macintosh and Motif as clients.

Documentum: (510) 463-6800.

New Paradigm Software Corp. of New York recently released its first product — a **middleware** application designed for linking applications across a heterogeneous network. The company's Copernicus software acts as a translator between applications on a variety of platforms. This lets developers connect clients to a variety of mainframe, minicomputer and database applications without having to write code to get the various programs to communicate.

The software, which runs on HP-UX and Windows servers, can be accessed by clients on a variety of platforms using several different networking protocols. Pricing starts at $25,000.

New Paradigm: (212) 557-0935.

Travelers division using Notes to restructure and ease planning

BY ADAM GAFFIN

Hartford, Conn.

It used to take Travelers Insurance Co.'s telecommunications division two months to prepare for the new year by collecting equipment and service orders from various business units, and then devising an overall deployment plan.

However, the division now does its yearly planning on the fly, thanks to its adoption of groupware last spring.

John Murphy, director of the telecommunications division, said the yearly planning effort used to be "an absolute nightmare," as business units provided incomplete requirements information and telecommunications division representatives failed to communicate with one another.

But last year, the telecommunications division set up a Lotus Development Corp. Notes database to track these yearly technology requests as part of an overall business reengineering plan supported through Notes.

The database lets telecommunications division managers and account representatives track and rank new equipment and service requests. Major projects are forwarded to a separate Notes database used by the engineers who will have to do the work, Murphy explained.

All of this means the division can now begin project planning "as soon as a project is even a gleam in somebody's eye," he said.

CENTRALIZED ARCHITECTURE

The Notes network architecture is somewhat unorthodox. The company has set up all nine of its OS/2 Notes servers — which communicate via IBM's Network Basic I/O System — at the same location, a setup that Murphy said is designed to simplify management and maintenance. Most Notes users within the company work in the Hartford area, so tying in remote offices has not yet become a major issue, he said.

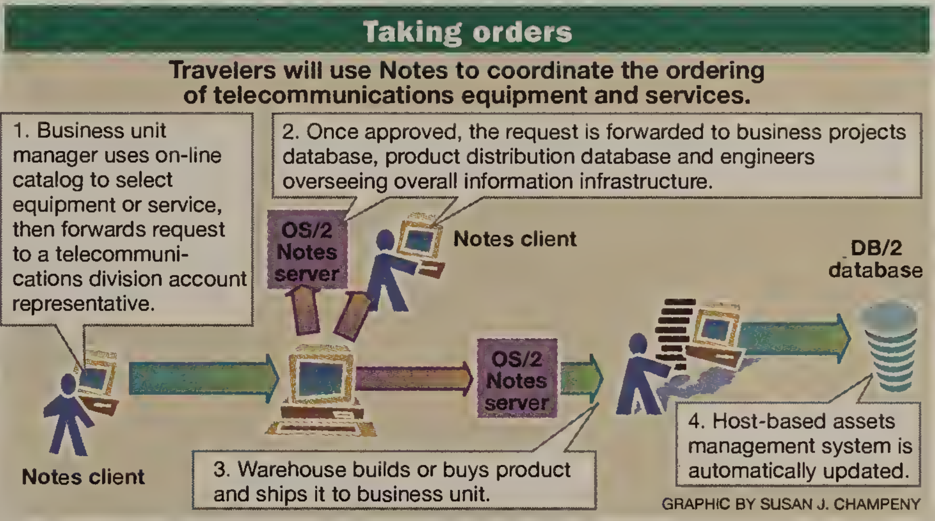
Travelers has designed its own Notes applications, relying on internal expertise.

Murphy's division had used Notes since 1991, mainly as a bulletin board. Under a business reengineering plan launched

See Travelers, page 33

Taking orders

Travelers will use Notes to coordinate the ordering of telecommunications equipment and services.


1. Business unit manager uses on-line catalog to select equipment or service, then forwards request to a telecommunications division account representative.

2. Once approved, the request is forwarded to business projects database, product distribution database and engineers overseeing overall information infrastructure.

3. Warehouse builds or buys product and ships it to business unit.

4. Host-based assets management system is automatically updated.

GRAPHIC BY SUSAN J. CHAMPENY

DOCUMENT MANAGEMENT

Start-up Vartec rolling out information retrieval system

BY ROSEMARY CAFASSO

Littleton, Colo.

Start-up Vartec, Inc. recently tossed its hat into the already crowded market for information retrieval and document management systems.

But the company thinks it has a fighting chance because its client/server offering, called VueFinder, is already used by nearly 5,000 employees at Martin Marietta Corp.

Vartec purchased the rights to what it calls an information sharing system from Martin Marietta in late 1993 and just began general shipments. VueFinder provides document publishing and management as well as text retrieval functions.

The start-up was launched by former executives of Martin Marietta and will provide support to the defense contractor under an outsourcing arrangement, said Craig Cook, president of Vartec. Although Vartec was set up to commercialize VueFinder, it was not financially backed by the defense contractor, he said.

VueFinder's server component runs on a Unix-based Oracle Corp. relational database management system. The server software handles searches and maintains a master database on the VueFinder environment.

Customers can link several VueFinder servers via Transmission Control Protocol/Internet Protocol lines, enabling the servers to function as a single system. This setup lets users send retrieval requests to a local server, which can then execute a search across other servers on the network.

The VueFinder client software will run on either Windows-, Macintosh- or Unix-based desktop systems. The graphical user interface (GUI)-based front end handles end-user functions, such as publishing documents and initiating searches, as well as administrative functions, such as managing the VueFinder environment.

The client software includes a command called Publish that enables users to dispatch a document for team consumption. Before doing so, the end user is able to set up the security parameters for the document and stipulate read-only or read/write access.

> **Getting inventive**
>
> **Vartec's Toland was named one of Martin Marietta's Inventors of the Year for his work on VueFinder.**
>
> ▼▼▼

VueFinder was designed for collaborative computing, Cook said.

The software was first built under a Department of Defense contract that required Martin Marietta to build an "electronic information sharing system that would allow [the Defense Department] to share everything being developed on that contract," said Cook, who worked at Martin Marietta for 13 years.

Don Toland, one of the original VueFinder developers and now vice president of engineering at Vartec, said VueFinder networks should be set up and maintained by a network administrator using Vartec's GUI-based tools.

Essentially, the administrator needs to help educate the VueFinder server so it knows what documents exist and where to find them. These documents can even reside on other SQL-based databases.

A directory of where data is located, called meta data, resides on the Oracle database.

When users make information requests, a VueFinder server component called the locator consults the directory to find where documents reside. The server then goes out and retrieves the information.

VueFinder costs $495 per seat for a 10-user package, the minimum configuration.

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IRS hoping for many happy returns with new system

Agency awards large imaging contract to Loral.

BY ADAM GAFFIN

Washington, D.C.

The handwriting is on the wall — and will soon be in the computer — for workers at the Internal Revenue Service's giant tax return processing centers.

The agency has awarded a $1.3 billion, 15-year contract to Loral Federal Systems, formerly IBM Federal Systems, to install large imaging systems at five processing centers across the country.

The ultimate goal is to dramatically reduce manpower costs by slashing the number of seasonal workers needed to process forms, as well as to give IRS employees speedier access to the data they need.

At the heart of the system will be scanning and optical-storage devices and software developed by Eastman Kodak Co., which will be linked by IBM's RISC System/6000 workstations running optical-character recognition software to Kodak 6800 automated optical-disk libraries.

Coleta Brueck, document processing system project manager for the IRS, said the workstations will be able to interpret handwritten numerals captured by the scanners into digital form. After stripping out the IRS form and instructions, the workstations will then ship this information to back-end storage devices large enough to handle data in the quadrillion-byte range, accessible to any IRS office over a planned national fiber-optic data network.

The system will also save a copy of the original scanned image in case it is later needed for legal reasons, Brueck said. However, she said the IRS agents will more often call up the digitized data rather than the images, which would take longer to ship across a network.

The workstations will be able to interpret handwritten numerals captured by the scanners into digital form, the the IRS's Brueck said.

Brueck said she could not provide further details on the network configuration because the IRS has yet to determine exactly how to link its offices and processing centers.

By the year 2001, the IRS is hoping the imaging systems will be able to scan an estimated 252 million handwritten or typed tax returns.

The nationwide system will also be designed to integrate this data with information from the 60 million tax forms the IRS estimates will be filed electronically by that year, Bruek said.

In addition, the agency expects to use the system to electronically store copies of some 35 million pieces of taxpayer mail it receives each year.

INSTALLING THE SYSTEM

Installation is expected to begin in August 1995, in an IRS processing center in Austin, Texas. Initially, the system will be set up for personal tax returns such as 1040 forms. By 1998, the system is supposed to be in operation at the IRS's four other processing centers in Ogden, Utah; Cincinnati; Memphis, Tenn.; and Kansas City, Mo.

Although the system should mean fewer seasonal workers, Brueck said some will still be needed to manually insert incoming forms into scanners and to man departments used to process forms that could not be read by the workstations. She said forms rejected by the system will be fed into another scanning system in the hopes of recovering their data.

An image make-over

The IRS hopes that by 2001, a $1.3 billion imaging system developed by Loral will scan 252 million handwritten or typed tax returns and convert them into digital files that can be quickly pulled up by IRS agents across the country.

At least one analyst, however, was skeptical that the system would work as promised, at least at the start, because of problems with scanning in handwritten characters.

Steve LeCompte, group director for IDC Government in Falls Church, Va., said he has yet to see any such large-scale character-recognition system work with a high degree of regularity.

"I don't think the technology is there," he said.

Brueck disagrees. She said the technology has advanced far enough to ensure reliable scanning of handwritten numerals, which comprise the bulk of information on the typical tax form.

She said the IRS is considering ways to minimize problems with alphabetic characters, such as those found in addresses. The solutions could include encouraging greater use of preprinted labels sent to taxpayers and redesigning tax forms to minimize the need for characters.

The imaging project is part of a larger $7 billion effort to automate the IRS called the Tax Systems Modernization project. Robert Dornan, senior vice president at Federal Source, Inc., a consulting firm in McLean, Va., said the IRS made a smart move in breaking the overall project into several pieces. Past efforts by government departments to hire one contractor for a giant information project have not always worked well, he said.

He added that the system, if successful, could mean dramatic improvements in IRS efficiency.

Today, an IRS agent can sometimes wait a week or longer while a needed set of taxpayer documents is retrieved from a warehouse. With the new system, this would be reduced to a matter of minutes, he said. ◼

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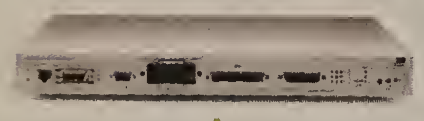

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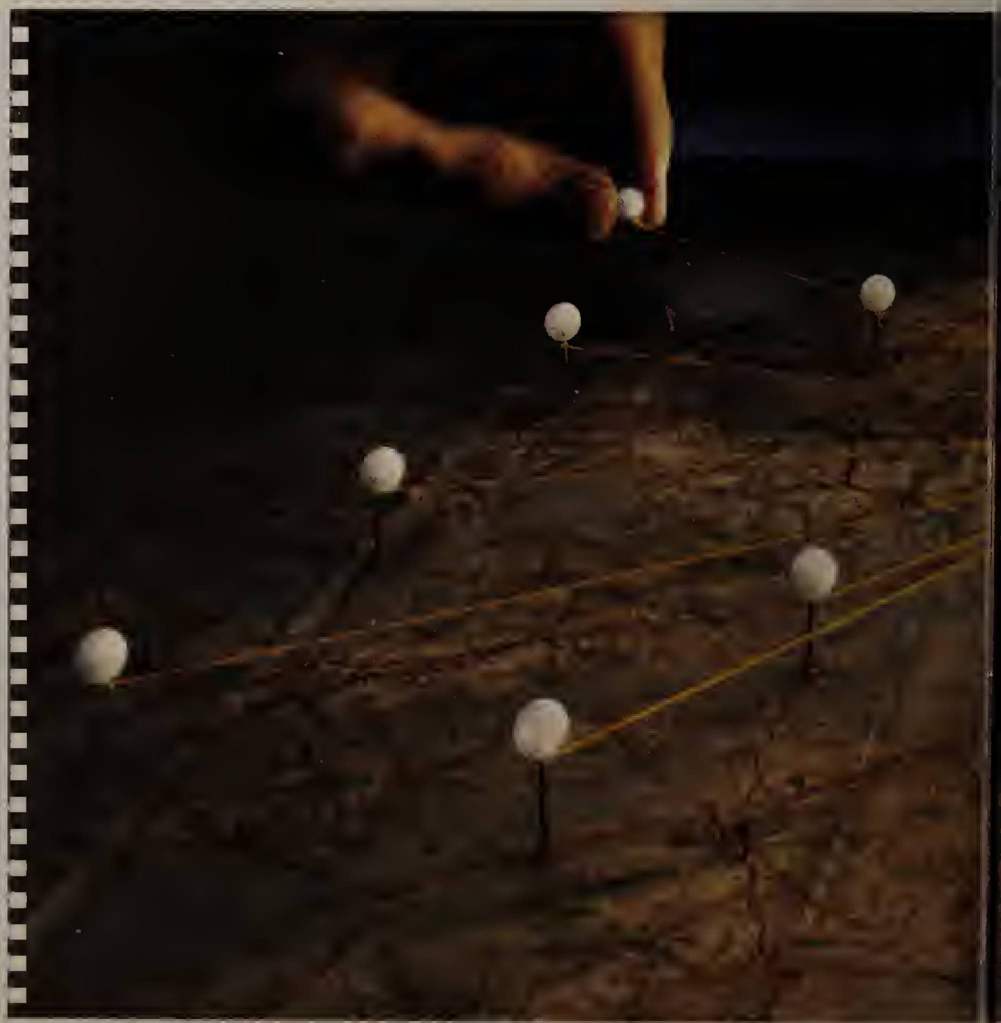

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DATABASE ACCESS

Software AG introduces middleware

BY PETER LISKER

Reston, Va.

Software AG of North America, Inc. has announced a new middleware product that will allow users of the company's Natural fourth-generation language application development tool to build client/server applications that can access a wide variety of databases.

Entire Access provides application developers on Unix and OS/2 clients with an SQL interface to server databases from The ASK Group, Inc., Informix Software, Inc., Oracle Corp. and Sybase, Inc. In addition, connectivity is provided to any database that complies with Microsoft Corp.'s Open Database Connectivity specification.

The middleware uses remote procedure calls to link clients to servers, providing a transparent application development environment.

> **"Natural was a great product in the '80s but is showing its age. With Entire Access, Software AG is taking steps to move the technology into the '90s."**

"For Natural users, the connectivity that Entire Access provides will be exceedingly helpful," said Curt Monash, president of Monash Information Services, a New York-based market research firm. "Natural was a great product in the '80s but is showing its age. With Entire Access, Software AG is taking steps to move the technology into the '90s."

Entire Access' SQL interface is based on the ANSI SQL standard and resolves differences between database vendor-specific SQL implementations and the underlying application code developed with Natural. Entire Access maintains specific drivers for each database that contains data about which SQL statements and calls each database supports.

"The availability of Entire Access means that developers can now write applications that go against databases from many vendors and bring true application portability to the enterprise database environment," said Dave MacSwain, Software AG's vice president of marketing.

Entire Access is available with support for Informix OnLine 5.0 and above, Ingres 6.3 and above, Oracle 6 and above, and Sybase SQL Server 4.9 and above. Future versions of the product will support additional databases as well as third-generation language tools from other vendors.

Entire Access for Unix costs between $400 and $23,300, depending on the number of users, while the OS/2 version costs $195 per developer. A local-area network version of the OS/2 product starts at $1,170 for eight users.

©Software AG: (703) 860-5050.

Travelers

Continued from page 29

early last year to improve productivity, "we did not start out to do a Notes development project," Murphy said.

But Notes quickly emerged as the obvious platform for tying together work flow and workgroup applications, as well as providing support for information sharing, he said.

The division wanted to avoid replicating its current setup, in which it uses "a myriad of [host and LAN-based] systems that didn't necessarily talk to one another," Murphy said.

TRACKING WITH NOTES

Still in the works is a project that will ultimately put the entire process of buying, installing and tracking new equipment and services into databases linked by Notes.

One Notes database, to be shared with other business units, will serve as a catalog of telecommunications products and services. This database will let business unit managers figure out the costs of projects they want before they order the products or services, among other things (see graphic, page 29).

When business unit managers make orders, the information will be copied to a Notes database used by the telecommunications division to track and schedule equipment upgrades and replacements. Telecommunications managers will review the requests and, assuming they approve them, forward them to the database used by the engineers and to another database used by the division warehouse for preparing orders.

When the warehouse receives an order, it will assemble or buy the product or service. The Notes database will also act as a quality control monitor — at each step while filling an order, a warehouse worker will have to click on an OK button on the Notes order form. Then, when the order is filled, an automatic message will be sent to a host-based IBM DB/2 database used to keep track of company assets.

Travelers, a 30,000-employee firm, now has about 1,100 Notes users, many of whom are in the telecommunications division. Those who area not within that area are mostly responsible for computer and telecommunications purchasing. According to Murphy, Notes growth at Travelers has been gradual.

Future Notes uses at Travelers will involve tying in computer and telecommunications equipment, as well as service suppliers, Murphy said. This spring, Travelers and AT&T hope to begin work on a project under which the company will be able to order AT&T services by sending messages to a Notes server at AT&T.

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Networks That Go the Distance™

Editorial

A couple weeks ago, we profiled Elaine Bond, one of the founding members of the Open User Recommended Solutions (OURS) group, which is promoting interoperability of computing and network equipment. Last week, I had a chance to meet Ken Carbaugh, who, along with his colleagues in the OURS W4 task force, may have a big impact on your life in the years to come.

Not familiar with W4? It stands for "What Works With What," and the W4 task force has established the very ambitious goal of creating a "framework for delivering unbiased, credible information about interoperability" to aid in product selection and implementation.

In essence, the W4 group is trying to establish a reference architecture under which products would be broken down into common components in order to make it easier for users to assess their potential interoperability. Ideally, vendors would describe their products using the guidelines of the architecture, which is based on an object model, so common comparisons could be made among systems.

"The goal is to break products and technologies into architectural components and then define each component," Carbaugh says.

If the W4 group is successful in drawing up the architecture and defining how products fit in, the product information you get before and after a purchase could be dramatically improved, and you could wind up saving a lot of time, money and headaches trying to force-fit technologies that don't work well together. The product information envisioned by W4 could insulate you from marketing bluster and misinformation, and make your job easier and safer.

But there's a catch: This is a big job, and one that may never end. There are always new products, and existing technologies continue to evolve.

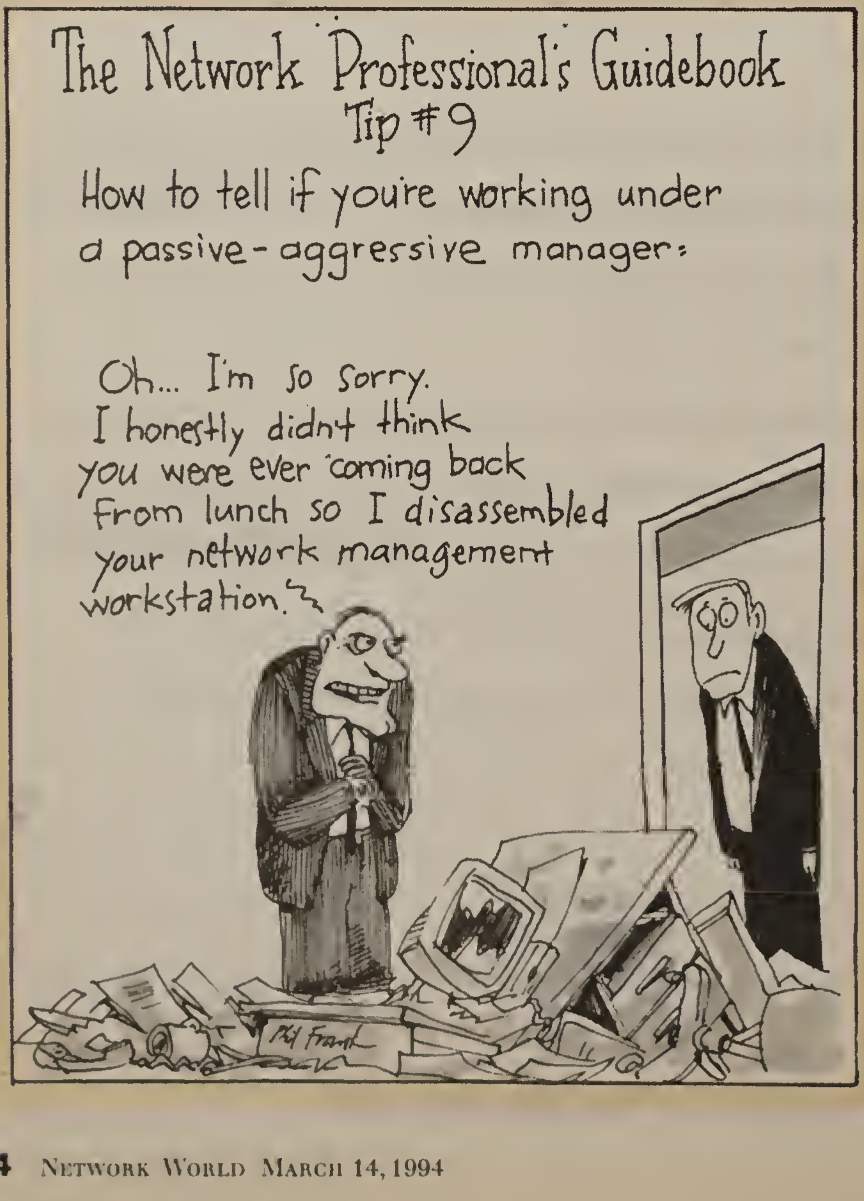
OURS and the W4 group, which will meet this week in Bellevue, Wash., to discuss its progress, need your backing — financially and beyond. If you'd like to know more about OURS and its other task forces, contact Executive Director Linda Heller at (212) 938-5534. For more on the W4 group, contact Ken Carbaugh at (603) 894-3059.

In order to focus on the business applications of technology, IS professionals have to get out of the business of playing systems integrator. W4 could go a long way toward achieving that end, and you could play a big part in helping W4 reach that goal.

JOHN GALLANT jgallant@world.std.com

TELETOONS

FRANK AND TROISE


The Network Professional's Guidebook
Tip #9
How to tell if you're working under a passive-aggressive manager:
Oh... I'm so sorry. I honestly didn't think you were ever coming back from lunch so I disassembled your network management workstation.
Frank

DISTRIBUTED COMPUTING

by John R. Rymer

OLE offers pros, cons as foundation for distributed apps

Microsoft Corp.'s Object Linking and Embedding (OLE) 2.0 is the first step in an evolution toward distributed object computing for Windows that will revolutionize the way software is developed, sold and used. The technology presents both opportunities and challenges to network managers and software developers. It is better to recognize these today than be surprised by them tomorrow.

If your organization has computers running Windows, chances are that OLE 2.0 technology is already installed on at least some of them. In the latest versions of their applications, Microsoft and other vendors have begun shipping the libraries required to support OLE 2.0. Most notable among these are Microsoft Word for Windows 6.0 and Shapeware Corp.'s Visio 2.0.

Today, OLE 2.0 allows users to flexibly integrate applications supplied by many vendors within single documents. For example, a user might construct a management report using Microsoft Word with an embedded financial model done in Lotus Development Corp.'s 1-2-3 and an embedded database report done in ReportSmith, Inc.'s ReportSmith.

In the short term, Microsoft hopes OLE 2.0 will help make desktop software more productive for users and more profitable for developers. OLE 2.0 applications are much easier for users to integrate with one another than are non-OLE applications. OLE 2.0 also lets software vendors write compact, specialized applications, rather than today's expansive collections of functions. (Microsoft Word 6.0 requires at least 20M bytes of disk space.) By structuring their software this way, vendors will give users the option of employing a table component with the functionality of a spreadsheet to add tables to their documents. Today, users have to employ the ho-hum table feature of their word processing software to do this. Specialization will help eliminate functional redundancy between applications.

OLE 2.0's role in distributed applications will become apparent this year when Microsoft begins shipping new products that support construction of compound documents from applications separated by nets. The most important of these products is a new version of Windows NT, code-named Cairo, that is equipped with special services to support distributed computing. Among the services Cairo is expected to offer is a directory to manage names on networks, a security service to manage permissions and a remote procedure call to carry messages from one entity to another. Cairo is due in late 1994 or early 1995.

Also in 1994, Microsoft plans to ship a new version of Windows, known as Chicago, that directly incorporates support for OLE 2.0. Chicago will put in place the technology required to support distributed applications at essentially no cost — it is just part of the operating system.

The word component is handy for describing the new, compact applications Microsoft expects vendors to use OLE 2.0 to create. In Microsoft's view, components are similar in intent and structure to the classic notion of an object in object-oriented programming. Objects are self-defining bundles of functions and data that interact with the outside world through an interface that is independent of the object's implementation details.

OLE 2.0 components conform to this same basic definition of objects. OLE 2.0 is based on the Component Object Model (COM), a system model for object-oriented software. COM provides structures and functions needed to support distributed objects, even if Microsoft doesn't yet offer a distributed version of OLE 2.0. The same underlying technology, for example, can be used to arrange a series of components into a work flow as a way of automating completion of a series of tasks, such as the approval or disapproval of purchase orders. In addition, COM supports the encapsulation of services (including systems services such as directories), databases and even legacy applications to aid integration.

COM does not address how components are built. However, over time, the model can be extended with new features in an evolutionary, nondisruptive way.

Microsoft's goal is to allow developers to enhance the code they build today using OLE 2.0 to take advantage of new, distributed computing facilities. In most cases, developers will not have to change their codes to move from today's OLE 2.0 to distributed versions of the technology.

For users, the implications of OLE 2.0 are huge. OLE 2.0 components are likely to be functional and flexible enough to satisfy most users' applications needs with off-the-shelf software. This could dramatically reduce the amount of software corporations must build in-house. If independent software vendors make effective use of OLE 2.0, users won't need as much internally built software as they do today. This should reduce the cost of custom solutions, if not the cost of basic building blocks such as word processing programs.

Components will eventually operate across networks as well as on individual machines. Microsoft's plan is to allow OLE 2.0 components to invoke functions on remotely located OLE components. Components will be able to interact without requiring either the developer or the user to understand the structure of the underlying network — or possibly to not even know that a network is present.

Microsoft has chosen to move toward the component model for software gradually. Microsoft is laying the foundation today and will roll out extensions, including support for distributed computing, during the next two years. This timetable will give users and software developers time to plan for the inevitable changes OLE 2.0 will bring to corporate computing.

For network managers, OLE 2.0 promises to increase network utilization as the number of distributed objects grows. However, implementing OLE 2.0 will require net managers to upgrade their current systems. As this writer discovered recently, OLE 2.0 runs unacceptably slow on a 4M byte PC. To run OLE 2.0, users' PCs will need at least 8M bytes of RAM and 200M to 300M bytes of disk space. These will be among the prices users must pay to progress to flexible, more cost-effective applications software represented by OLE 2.0.

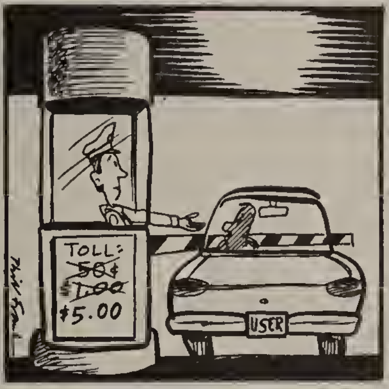
Rymer is editor in chief of the "Distributed Computing Monitor," published by Patricia Seybold Group, Inc. in Boston. He can be reached at (617) 742-5200 or via the Internet at jrymer@mcimail.com.

REGULATORY ISSUES

by Hank Levine and Ellen Block

FCC: Stop the abuse of Filed Rate Doctrine

As telecommunications competition develops, one of the worst remaining roadblocks to a functioning market is turning out to be the rules designed to *protect* users from monopoly service providers. It is time that the Federal Communications Commission took action to stop carriers from using the traditional tariff regime as a shield for behavior that would be indefensible in the unregulated world of commercial contracts.



The problem is the Filed Rate Doctrine, an icon of traditional utility law that says that a carrier must charge customers the rates and enforce the terms contained in its filed tariffs — no more, no less. One corollary of the doctrine is that tariffs, once approved or allowed to take effect by a regulatory agency, take precedence over any inconsistent term in a contract between the parties relating to the same service. This is true even if the carrier had agreed to the contract term prior to making the inconsistent tariff filing and had specifically agreed not to make such a filing.

The doctrine has become a carrier trump card in the high end of the market, where carriers and their customers are tending more and more to negotiate the price and terms of service. There, the doctrine effectively gives the carrier the power to unilaterally change the terms of a negotiated agreement. In the unregulated commercial world, such behavior would be a breach of contract, and the injured party could ask a court to order compliance or award damages. There are several steps the FCC should take to ensure that customers have the same remedies in the regulated telecommunications world.

First, the FCC should prohibit carriers from filing tariff provisions that are inconsistent with their contractual obligations unless the customer has consented to the tariff or the carrier can demonstrate a strong justification for the filing. The FCC can replicate the rules that operate in the commercial world by declaring an unjustified, unilateral tariff filing unreasonable, and thus unlawful under the Communications Act of 1934.

Second, the FCC should require carriers to give advance notice of filings to affected customers and should preserve a tariff protest period to permit customers to defend themselves against a carrier's attempt to use tariffs to evade the terms of a negotiated service agreement. Although the Communications Act permits anyone to challenge a tariff filing before it takes effect, this mechanism is meaningful only if the challenger learns of the tariff filing and can react within the protest period. But the FCC's rules provide no protest period for the tariff filings of MCI Telecommunications Corp. and Sprint Communications Co. L.P., which take effect one day after public notice of the filing. The protest period for AT&T's negotiated tariffs is six days, but AT&T has asked to be brought under the same one-day rule applicable to its competitors.

Third, the FCC should revamp its formal complaint process, which is infernally slow. Delays of several years deprive the complaint process of real value, especially since the carrier's tariff remains in effect while the complaint is pending. And although customers have a legal right to take disputes with carriers to court, the cases are routinely bounced into the "black hole" of the FCC's complaint process because the courts prefer to see these matters decided by an expert agency.

Users have brought these issues to the FCC's attention, but the agency has not acted — it believes that no carrier would dare use its power to amend a contract without customer consent because of the resulting ill will and loss of business. Unfortunately, the facts do not support that belief. When a customer is not viewed as particularly desirable (as is often the case with resellers, for example) or if the stakes are high enough, the interexchange carriers have been more than willing to flex their Filed Rate Doctrine muscles.

In one notorious tariff filing in May 1993, AT&T sought to impose a new charge on its Tariff 12 customers. The carrier even wrote in a provision saying that the language that gives a Tariff 12 customer the right to terminate its agreement without liability if AT&T raises a rate without customer consent would not apply to future increases in the new charge. (Users protested, and the offending provision was eventually dropped.) And after a court ordered MCI in July 1993 to tariff its own custom network service agreements, that carrier made several filings containing terms and conditions that its customers had not seen, much less agreed to. In at least one case, the new terms put the customer in immediate default. MCI quickly retreated.

Users do not want to do away with the Filed Rate Doctrine. On the other hand, carriers shouldn't be allowed to use it to unfair advantage in those segments of the market where competition has reduced the disparity in bargaining power between carriers and customers. The FCC itself has said that market forces are the best way to achieve the goals of the Communications Act. The agency should, therefore, take steps to make sure that customers can make full use of the same legal tools they would have in the unregulated world of commercial contracts.

➡ Levine and Block are partners in the Washington, D.C. law firm of Levine, Lagapa & Block. The firm specializes in the representation of large telecommunications users and companies built on new and emerging technologies. They can be reached at (202) 223-4980.

Letters

History lesson

I enjoyed Douglas Welch's column on telecommuting (Feb. 14, page 39). I've been consulting in the telecommuting field since 1982 and publishing a monthly subscription newsletter, "Telecommuting Review," since 1984, so I've seen a lot of the history that Welch refers to in his article.

Gil Gordon
President
Gil Gordon Associates
Monmouth Junction, N.J.

Opportunities from tragedy

It was nice to see a corporate perspective on the telecommuting opportunities presented to our company by the unfortunate tragedy of the Northridge, Calif. earthquake.

We agree with Douglas Welch's views and congratulate *Network World* on providing this editorial for everyone's benefit.

Our company is a systems integrator specializing in telecommuting/work-at-home systems. Needless to say, our firm has been extremely busy since the earthquake helping our clients set up additional telecommuting resources for displaced and isolated employees.

We hope that these projects will produce the results which will allow for telecommuting to become a permanent part of the corporate landscape.

Robert Heintz
President
The Helfrich Co.
Irvine, Calif.

RSA still secure

In his letter to the editor (Feb. 14, page 51), Colin James III claims that the Rivest-Shamir-Adleman (RSA) public-key cryptography algorithm has been broken.

The security of RSA depends on the difficulty of factoring large numbers. Today's implementations of the algorithm use numbers of 1,024 bits or larger. Factoring these numbers requires millions of years of computing power and is well beyond even the theoretical promise of parallel computing.

While it has never been mathematically proven that factoring large numbers is the best way to break the RSA algorithm, no one has yet proposed a better way.

Despite James' claim, RSA is still as secure as it was when it was first invented in 1981.

Bruce Schneier
Author
Applied Cryptography
Oak Park, Ill.

Unfair label

I was greatly disappointed by being stereotyped in Ellen Messmer's article "Child support law prompts states to build EFT net-

See Letters, *page 48*

Letters must include your name, title, company, city, state and a daytime phone number for verification. All letters are subject to editing for space and clarity. Letters may be sent via the Internet to network@world.std.com; via fax to (508) 820-3467; or by mail to Editor, *Network World*, 161 Worcester Road, Framingham, MA 01701.

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Buyer's guide

It's time to seize the day

Users stand to gain the most as carriers are more willing than ever to cut a deal for virtual net services.

BY DANIEL BRIERE AND MARK LANGNER

Users examining virtual private network services today couldn't be hitting the market at a more opportune time, as carriers are now waging the battle for customer dollars over such issues as contract flexibility, innovative pricing and robust billing options.

The advent of intelligent network architectures has enabled carriers to match one another on a feature-by-feature basis, forcing AT&T, MCI Communications Corp. and Sprint Corp. to distinguish their offerings in other areas.

As a result, users today find themselves with a chance to put a plethora of traffic – including inbound 800 and cellular – under virtual net umbrellas at very deep discounts from tariffed rates. And they'll be able to go a step further, too, by viewing charges for those services on a single virtual network bill.

> "Any large company which is not using a virtual network today is probably leaving dollars on the table."
>
> -Wayne Davidson
> Arthur Andersen and Co.

Evidence of this turnabout in carrier strategy abounds. Sprint recently introduced its VPN Premiere offering, which it is positioning to eventually replace the older Virtual Private Network (VPN) service and includes a simplified pricing structure. Sprint is also rolling out enhanced billing capabilities. AT&T last year completed a revamping of its Software-Defined Network billing system and is now pitching new administrative management offerings. MCI also revamped its billing system and is making new switched data services available under contracts for its Virtual Network (Vnet) service.

All three carriers also have bucked up their services with electronic billing software packages, expanded links to more international locations and options for putting cellular phones on virtual nets.

Such innovation in service packaging proves that virtual networks have come a long way from the days when they were positioned as replacements for private-line voice networks.

"VPN Premiere forms the core capability for building business applications and bundling different forms of access and service under coordinated billing and management," says Claudia Boosman, VPN Premiere product manager at Sprint.

Marlon Jahnke, MCI's Vnet product manager, says, "Vnet is not an individual service anymore. It is a concept that can be extended to a number of services such as cellular or switched data. Those services can be married to the intelligence in Vnet to solve specific business applications."

While carriers are building these new options into their services, virtual net architectures still adhere to a basic design principle. At the core of any virtual network service is a centralized database that maintains a seven- or 10-digit private dialing plan for each customer, along with call processing information. Carrier switches handling virtual net calls check with this central database to convert private dialing plan numbers to switched network numbers and route the calls appropriately.

In the future, carriers will be able to merge the virtual net database with the one used for 800 service, bringing a tighter form of integration to users and making it possible for virtual net and 800 traffic to share access to a common set of intelligent network features.

Virtual net services are targeted at multilocation customers spending $50,000 or more a month in switched network usage. AT&T, MCI and Sprint all have agreements with international carriers that enable virtual network calls made in the U.S. to reach cross-border sites.

All three carriers also offer accounting codes that enable customers to track usage to specific callers and authorization codes to validate that callers have certain calling privileges with AT&T and MCI, users can require codes for only those calls that meet specific criteria, such as an international call. For instance, a code can be required to reach a certain number or to use a virtual net feature such as voice mail. Sprint does not yet offer this capability.

Virtual net offerings are also likely to grow into highly integrated global arrangements targeted at multinational customers.

With expected availability by year end, services such as AT&T's WorldSource and BT/MCI's Newco will go beyond virtual net capabilities to provide outsourcing, private-line and network management needs under a single contract.

Virtual network capabilities are also making their way into more basic services, such as WATS plans that are targeted at companies spending $20,000 monthly. Cable & Wireless' Virtual Network Service (VNS), for example, provides simple accounts and authorization codes but has no private dialing plans and lacks network management options such as consoles that enable users to add, delete or change information in their database.

So despite its name, VNS is really a high-end WATS service. Other souped-up WATS products, such as MCI's Vision, Sprint's Clarity and AT&T's Uniplan, also fall into this category.

PRICING

SDN, Vnet and VPN Premiere are remaining as the three from which to choose when you're in the market for a full-fledged virtual net service. And the deciding factor in going with one over the other is largely an issue of the bottom-line cost.

"In choosing our provider, the services were seen almost as a commodity on basic functionality," says David White, manager of production services for Occidental Petroleum Services, Inc. in Tulsa, Okla. "We evaluated the carriers primarily on price."

For the most part, users can forget about published tariffs and pricing plans when comparing costs. Carriers are quicker than ever to jump into custom contract negotiations if they sense that is what is needed to win business, especially from large users. In today's market, it seems that all users have to do to get the best price is simply tell the carriers the amount of traffic they can generate over the term of a contract, then sit back and wait for the lowest bid.

In coming up with their bids, carriers use pricing structures that vary in complexity. Sprint totally revamped its usage-based pricing strategy and migrated to an intelligent network-based processing platform when it rolled out VPN Premiere (*NW*, Jan. 31, page 6.)

Sprint's new pricing strategy went into effect March 1. The strategy signals a departure from traditional usage-based pricing methods and includes a number of different discount plans for users signing multiyear contracts. Under two of its three- and four-year discount plans, Sprint combines the cost of long-distance usage and nonrecurring charges for access in a single price. Sprint continues to charge separately for nonrecurring feature charges.

Under the new plan, Sprint also drops the five mileage bands it previously used to calculate per-minute costs in favor of a more postal zone approach. Similar to the way some companies structure costs for shipping packages across postal zones, the new approach charges one price for intrastate calls and calls to bordering states, and another for calls to states in the rest of the country (see graphic, page 38). There is a lower price in the Northeast corridor and Washington D.C. that takes into account the shorter dis-

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inside

- Let's make a deal: Negotiating a custom virtual net contract. *Page 38.*
- Buyer's Guide chart to virtual private network services. *Page 40.*

1994 NETWORK WORLD SHORT LIST

- The Short List probes the strengths and weaknesses of the three virtual net offerings. *Page 40.*
- Reader views on virtual private network services. *Page 41.*

Continued from page 37

tances between states in that region.

By eliminating the five mileage bands, customers can more easily calculate costs based on state-to-state calling patterns.

"Sprint's move is representative of a trend toward simpler pricing throughout the telecommunications market," says Tom Walton, president of Walton and Walton Associates, Inc. in Richmond, Va., an industry consulting firm.

One advantage of this new strategy is that under the combined usage and access discount plan, customers will no longer need to factor in the various access costs commonly associated with virtual networks. "This type of simplified pricing is especially attractive to smaller virtual network customers who may not want or have the resources to manage a contract with numerous locations and the associated charges," Walton says.

In rolling out VPN Premiere, Sprint wanted to make sure users of its existing VPN service would not see drastic differences in price. The goal in Sprint's pricing strategy change was to alter the concepts behind pricing without changing the amount of money customers pay for calls.

Price hike

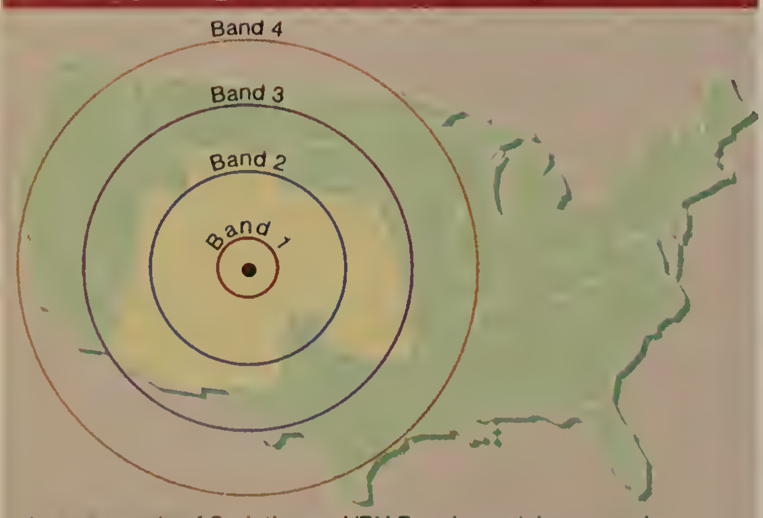
AT&T, MCI and Sprint have raised virtual private network service prices about 6% annually for the past 3 years. The carriers hiked prices 4 times in 1993 alone.

To accomplish this goal, Sprint ran a number of algorithms on calling patterns to ensure that VPN Premiere customers pay about the same as they would have under the old pricing scheme. Sprint claims that most customers will pay the same, maybe even a little less, under the new pricing scheme.

AT&T and MCI still base their usage pricing on a mileage basis and bill separately for monthly recurring charges for access lines and features, as well as nonrecurring charges such as installation. With AT&T and MCI, users can negotiate each pricing element separately, which has the benefit of getting deep discounts for elements used most often but has the drawback of requiring lengthy negotiations at the bargaining table.

For example, consider that access charges can consume up to 40% of the overall cost of service. Saving money on access costs through negotiation could net big returns. And the long-haul carriers have been aggressive in offering discounts on access circuits they acquire from local carriers on behalf of their customers.

Comparing Sprint's old pricing with new



In an example of Sprint's new VPN Premiere pricing, users in a Colorado site can call intrastate and neighboring state sites for one price and the rest of the nation for another. Under Sprint's old pricing scheme, calls were priced according to mileage bands.

GRAPHIC BY SUSAN SLATER SOURCE: TELECHOICE, VERONA, N.J.

In parallel with its simplified pricing scheme, Sprint has also taken a new path in addressing local access cost. Under VPN Premiere, Sprint offers a Maximum Value Plan (MVP), whereby access costs apply to the overall virtual net term and volume discount schedules. Discounts are available for term commitments of two to five years and range from 8% to 35%.

MCI's Access Pricing Plan (APP) provides a single discount schedule for local access bundled under the virtual network contract. Local access services covered under APP are discounted from 5% for a one-year contract up to 25% for a five-year contract. AT&T has a similar program, called Access Value Program (AVP), that provides discounts of 5% to 24%, depending on contract length.

However, there are subtle but important differences in these plans. Under APP, MCI does not charge customers an early termination penalty if they trade up to a higher capacity access line, such as upgrading a T-1 to a T-3 or when moving access from one location to another. Under AVP, AT&T does not charge for an upgrade to T-3 but does charge if the change moves the circuit to another local access and transport area.

Sprint's MVP is easier to use than the AT&T and MCI plans because access costs are covered under the VPN Premiere pricing plan instead of priced separately. MVP discounts run deeper, as well. But due to the integration of access costs into the overall VPN Premiere usage charge, a bottom-line difference between the cost of access under the Sprint plan as opposed to the AT&T and MCI plans may well be negligible.

Just as pricing schemes are changing, so too are the rules for negotiating virtual network contracts. Users in search of the lowest bottom line-per-minute calling cost can and should put just about anything on the bargaining table (see story, this page).

GETTING UNDER THE UMBRELLA

As part of their effort to offer deeper-than-usual discounts, the carriers are also positioning virtual networks as an umbrella offering that will enable users to sign up for other services, such as outbound 800, as part of a single contract. Users taking this step will be able to apply traffic from those other services toward volume and term virtual net discount schedules and receive a single bill.

Combining services under a single contract is more an administrative function than a technical one. For instance, users can maintain separate 800 and virtual net databases when combining both under one contract.

Whether a particular service can be integrated under a virtual net contract is another question. MCI and AT&T currently only provide integration of 800 and virtual network services in custom negotiated contracts. With VPN Premiere, Sprint is providing combined 800 and virtual network services as a standard offering. It is the only carrier that offers the flexibility to

Continued on page 40

Cutting your best deal

Price is indeed one of the major factors to consider when selecting a virtual private network provider. But in today's marketplace, understanding how to get attractive contract terms is just as important. Here are some ground rules for getting a carrier to make an offer you can't refuse.

Rule No. 1: *Let the carrier know you're serious about halting negotiations.*

Whether cutting your first deal or renegotiating a contract, state in no uncertain terms that you'll be willing to go to another carrier if you don't get what you want.

This rule is especially important to renegotiators. "If an incumbent carrier senses from formal or informal positioning that the customer is not serious about switching [to another carrier], the customer will not be able to get the best deal," says Hank Levine, a partner with the Washington, D.C. law firm of Levine, Galapo and Block.

AT&T customers seeking to renegotiate 800-service contracts last year used this ploy to their advantage, Levine says. A Federal Communications Commission-ordered Fresh Look period that followed implementation of 800 portability enabled those customers to seek better deals without incurring penalties for breaking existing AT&T contracts. Users who threatened to switch carriers under Fresh Look were able to negotiate 10% to 20% savings over existing 800-service contracts, according to Levine.

Rule No. 2: *Everything's negotiable.*

This sounds simple, but users are often unaware of just how many service items they can get at discounted rates or under special terms if they only put them on the bargaining table.

"There is so much to ask for in the negotiating process to get the best deal," says Michael Powell, manager of Telecommunications Product Planning Group for Intel Corp. in Folsom, Calif. "The problem is knowing what to ask for. In many cases, even your [carrier] account team doesn't know all [the special things] that you can get in a contract."

Items that can be brought to the table include waivers for certain installation and recurring fees for features and options, free or low-cost custom support and management, and larger discounts than are available from the tariff.

But it's negotiating fixed prices on usage costs and price increase caps where you've got to bring out the big guns. Most contracts are based on floating rates and fixed discounts that permit carriers to pass along rate hikes to contracted customers. To avoid this, negotiate a fixed price for the contract length. If the carrier balks, set price increase caps; one on yearly increases and one on increases over the contract length.

Rule No. 3: *Get a tailor-made contract that suits you.*

A year ago, users had to rack up $3 million to $4 million in annual usage fees to get custom contracts for virtual net or other services. Today, users spending $500,000 a year ca get one. Sprint Corp. and MCI Communications Corp. are offering special terms to smal customers in response to custom AT&T Custom Services agreements. Since offering the in February, AT&T has filed approximately 900 Custom Services deals, almost all o which include virtual networks.

There are two tacts to take when negotiating custom contracts, Levine says. The first i to make sure you secure special terms and conditions regarding such options as customized network management or billing. The second is to get price breaks. Customers spending less than $5 million a year are unlikely to get both.

While many customers are combining usage from 800 and virtual net services to generate large discounts in custom deals, some are taking things a bit further. "We found tha by combining 800, private-line and virtual network traffic under a single contract, w were able to drive a better deal," says John Brown, senior specialist with General Mill Inc. of Minneapolis.

Combining different products under a single contract is not the answer for everyon however.

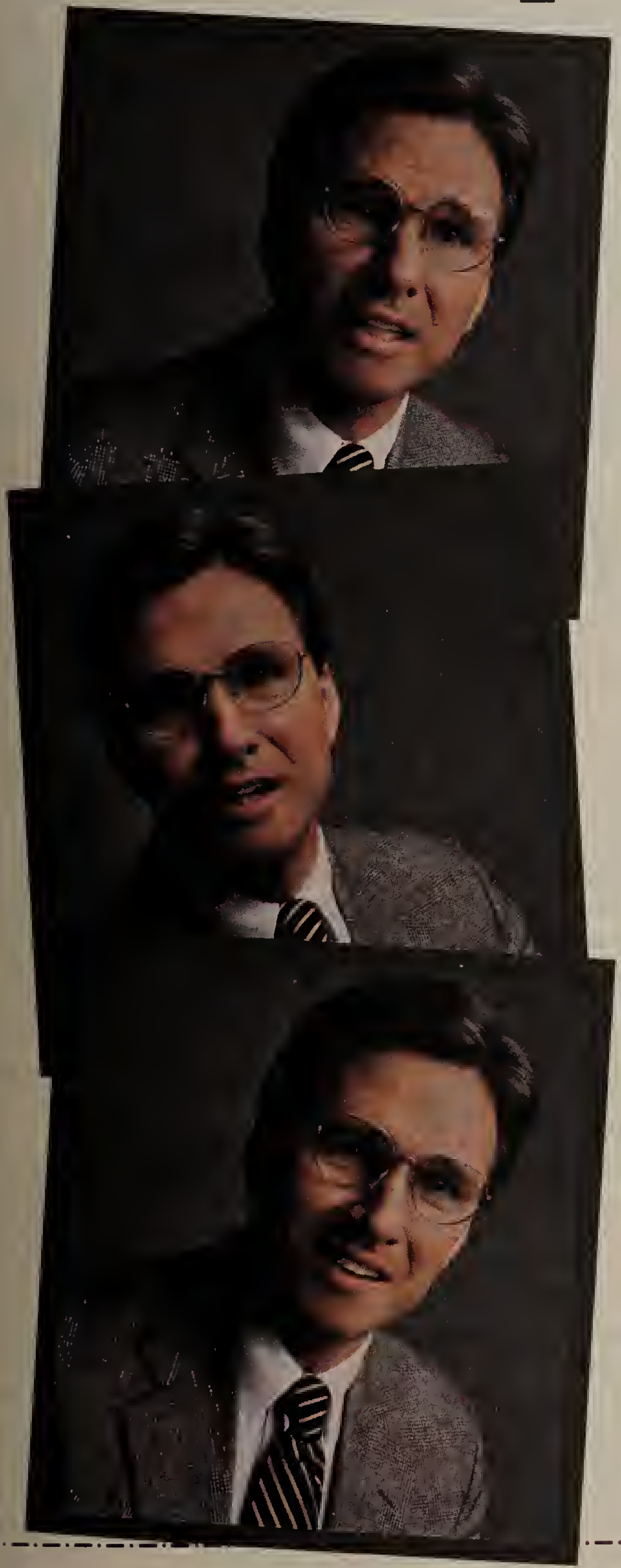
"We keep most of our traffic with one carrier for economic reasons," says Richar Moore, network project manager for Mellon Bank N.A. in Pittsburgh. "But we use [bot MCI and AT&T] for business relationship and redundancy reasons."

Rule No. 4: *Do your homework.*

Proper research will be the cornerstone to successful negotiations. There is a wealth o public information available for reference — for instance, AT&T's Contract Carriage deal are on file with the FCC. By simply looking at the contracts of a few similarly sized companies, you can better gauge just how low a price you can get. It should also help you identify other carrier terms to bring to the bargaining table.

M. Langne

"It's easy selling local private lines when your network's up 99.99% of the time."



"When it comes to circuit availability, nobody does it better. But we figure why not go for perfection? Stay tuned."

"Reliability's just one of the benefits you get when you buy a private line from us. Our repair record on both DS-1 and DS-3 lines is also second to none. When you have as few problems to fix as we do, you can do a better job of staying on top of the them."

"I'm not the only perfectionist around here."

"I'll be honest with you, I'm not sure I'd fit in at any other local carrier. My co-workers here share my old-fashioned sense of commitment to our customers. So when I make you a promise, I'm confident they'll back me up."

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TCG

Virtual private network services

Company	Product	Access from nonvirtual network sites		Calling card access via:	Custom call screening by:	Account codes			Authorization codes				Call routing options			Switched data support		Integrated service options			Toll fraud protection	Billing options						Pricing structure	
		Available in: C = Canada I = Int'l countries U = U.S.	Users can call: CA = On-net Canadian sites CB = Off-net Canadian sites IA = On-net Int'l sites IB = Off-net Int'l sites UA = On-net U.S. sites UB = Off-net U.S. sites	A = 800 number B = 0 plus dialing C = Carrier access code D = Int'l operator-assisted	A = Account or authorization code C = Called number D = Day of week T = Time of day	Entered after dialing	Max. no. of digits	Can be limited by calling criteria	A = Entered before dialing B = Entered after dialing	Max. no. of digits	Available with: D = Dedicated access O = Off-net access S = Switched access	Can be limited by calling criteria	No. of standard reroute attempts	Customer-defined alternate routing	Routing by call origin	A = 56K bit/sec B = 64K bit/sec C = 384K bit/sec D = T-1	No. of countries	Voice mail	Videoconferencing	800 service	C = Consulting CL = Carrier accepts liability M = Monitoring	CD-ROM	Magnetic tape	Paper	EDI	No. of billing levels	Includes billing for other services	Access fee: F = Flat rate U = Usage-based	Usage fee: M = Mileage-based P = Postage zone-based
AT&T (800) 248-3632	Software-Defined Network	C, U	CA, CB, IA, IB, UA, UB	B, C, D	A, C, D, T	✔	15	✔	B	15	D, O, S	✔	No limit	✔		A, B, C, D	20	✔	✔		C, CL, M	✔	✔	✔	✔	4	✔	F	M
MCI Communications Corp. (800) 933-9029	Vnet	C, I, U	CA, IA, UA	A, C, D	A, C	✔	11	✔	B	11	D, O, S	✔	1	✔	✔	A, B	25		✔		C, M	✔	✔	✔	✔	9	✔	F	M
Sprint Corp. (800) 463-6487	VPN Premiere	C, U	UA, UB	A, B, C, D	A, C, T	✔	5		A, B	11	D, O, S (1)		3			A, B	9	✔	✔	✔	C, CL, M	✔	✔	✔	✔	6	✔	U	P

Footnote:
(1) Off-net and switched access authorization codes offered at an extra cost.

EDI = Electronic data interchange

Continued from page 38

allow smaller customers to negotiate custom VPN contracts.

AT&T will make further inroads to service integration as its OneNet service is developed. OneNet will enable users to create a joint virtual network and 800 database. Announced last year and expected to be available in the second quarter, OneNet should provide the same set of features for both inbound and outbound calling.

While Sprint is melding virtual net and 800 services into its VPN Premiere offering, the carrier does not have the same integration of inbound and outbound capabilities as the proposed OneNet service. VPN Premiere integrates administration and billing functions as opposed to integration of services. MCI, while providing combined virtual network/800 service pricing on special contracts, has yet to announce a joint 800/virtual network product.

Switched data services are also being placed under the virtual net umbrella, a trend that users like. "I firmly believe that data will go the same way that voice did — into the virtual arena," says Wayne Davidson, principal-network director at Arthur Andersen and Co. in Chicago. "This will allow us to get out of private lines for data in the same way we did for voice with virtual networks."

All three carriers now provide dedicated data subnetworks to carry switched data over virtual networks. This support for switched data under virtual nets that are designed to primarily handle voice traffic is separate from virtual data network services that carriers provide. For example, users looking for high-capacity virtual data network circuits to support large amounts of data can still turn to such offerings as AT&T's SDN.

The dedicated data subnetworks are attractive to users looking to meld smaller amounts of data at lower speeds into their virtual nets. Switched data calls received on virtual net access lines are routed to these subnetworks rather than to the public-switched voice network.

Integrated 56K/64K bit/sec switched data services are now standard virtual net fare. Costs for switched data are included in billing and management reporting, as well as in pricing and discount plans.

AT&T is the only carrier to provide a switched 384K bit/sec service based on the International Standards Union's Telecommunication Standardization Sector HO standard as part of its virtual network product. MCI and Sprint can also offer 384K bit/sec switched data but only if the user implements inverse multiplexing options that spread the high-speed data stream across multiple 64K bit/sec channels. MCI is promising support for H0 in the second quarter.

Switched data calls using Sprint's dedicated subnetwork are priced at a premium of approximately 7% more than a standard voice call. Customers can continue to use Sprint's voice network for switched data at 64K bit/sec but doing so requires the use of customer-owned echo-canceling equipment.

While less expensive than using the dedicated data network, relying on customer equipment to disable the echo cancelers o Sprint's voice circuits is not a sound transmi sion strategy because those cancelers ca break down and wreak havoc on data transmi sions.

AT&T charges about 10% more for data tra fic than for voice calls on its SDN, while MC prices data traffic about 4% higher than voi calls made under its Vnet service.

The Short List:

Virtual private network services

This Short List identifies the key criteria that can best guide users in selecting a virtual network service that meets their enterprise networking needs. With only three providers in the market, we chose to compare how the carriers excel or fall short in meeting these key criteria.

Pricing

With its new VPN Premiere offering, Sprint Corp. provides a more simplified pricing structure than that of AT&T's Software-Defined Network and MCI Communications Corp.'s Virtual Network (Vnet). In some of its various VPN Premiere plan options, Sprint even bundles the cost of all service elements such as local access, recurring features and nonrecurring installation charges into its usage fee, while the others charge for them separately.

Sprint also uses fewer mileage bands for usage fees than the other carriers.

AT&T positions SDN as a premium product over Vnet and VPN Premiere, and continues to charge a higher usage rate than its competitors. But it is willing to negotiate custom contracts that offer deep discounts. Custom deals are more readily offered to users willing to make a longer term commitment than is required to get similar price breaks from MCI or Sprint.

To remain competitive, MCI recently revamped its pricing schedule, adding new levels to its discount schedule that target specific types of users. Like the other carriers, MCI is willing to cut tariffed rates if that's what is needed to win customers.

Service integration

Each carrier enables users to tuck other services such as 800, voice mail and videoconferencing into virtual net contracts. Sprint offers 800 and virtual network service from the same tariff. AT&T and MCI provide 800 and virtual net service integration in a single contract, but both carriers require that it be done through custom contract negotiations.

AT&T plans to tightly integrate 800 and virtual net services under its emerging OneNet offering, which is due out in the second quarter.

Billing

Each carrier has revamped its billing system and provides PC-based software that enables users to tap into those systems on-line. MCI has a complete, mature solution with its Location Level Billing and Portfolio packages. These packages offer a high degree of flexibility in tracking costs by enabling users to break bills into nine hierarchical levels. AT&T has rolled out a new, high-capacity SDN billing system that enables it to promise delivery of SDN bills within 15 days of the billing cycle's close. Sprint is folding billing for VPN Premiere into its Invoice Processing System, which enables it to send out a single bill that details virtual net charges along with those for other services.

Electronic billing options

Each carrier offers the vast amount of call detail information virtual nets generate on CD-ROM. Yet AT&T and Sprint offer more robust PC-based software for processing the information stored on CD-ROM. AT&T's SDN Billing Edge and Sprint's FONView read preindexed data directly from the CD-ROM, enabling users to efficiently create specialized reports. The carriers can preindex call detail data by such criteria as account codes, call types, day of week or time of day. Sprint also provides call detail information for its other services, including cellular usage via FONView.

MCI's Perspective for Vnet product falls short of the others, primarily because the data stored on CD-ROM is not indexed. This requires users to pull the raw data from the CD-ROM onto a PC hard drive for indexing before reports can be generated.

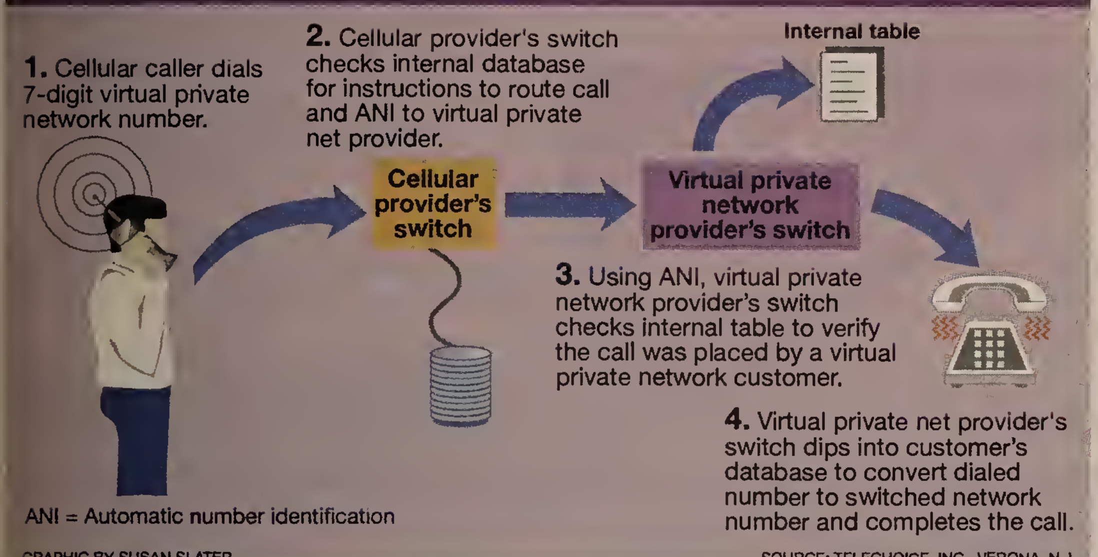
Network management

AT&T offers the best network management options via its full line of Accumaster Network Management Services, which enables users to tap into SDN and a variety of other internal AT&T management systems via an Accumaster Services Workstation. MCI is not far behind.

Sprint's virtual net management is weak at this point. But the carrier is working on software that will run on its workstation-based Insite Executive and provide more robust on-line virtual net management.

Carriers are also enabling their virtual networks to venture into the telecommuting realm. At ComNet '94 Washington in January, MCI announced Vnet DataStream, an option that enables customers nationwide to access Vnet via Integrated Services Digital Network Basic Rate Interface (BRI) lines that provide two 64K bit/sec channels. MCI will coordinate BRI provisioning with local carriers and will roll usage from BRI sites into the corporate Vnet account.

Cellular access to a virtual private network


1. Cellular caller dials 7-digit virtual private network number.
2. Cellular provider's switch checks internal database for instructions to route call and ANI to virtual private net provider.
Internal table
Cellular provider's switch
Virtual private network provider's switch
3. Using ANI, virtual private network provider's switch checks internal table to verify the call was placed by a virtual private network customer.
4. Virtual private net provider's switch dips into customer's database to convert dialed number to switched network number and completes the call.
ANI = Automatic number identification

GRAPHIC BY SUSAN SLATER

SOURCE: TELECHOICE, INC., VERONA, N.J.

A BRI access option can extend Vnet's reach into remote and small office locations. Sprint and AT&T will provide connections to their services over BRI, but customers are on their own when dealing with the local carrier.

All three carriers are also integrating support for wireless services into their virtual net offerings. For example, in the past year, each carrier has made it possible for customers to treat cellular phones as a virtual network site for calls made within their local cellular service area (see graphic, this page).

However, when roaming, keeping the cellular phone on the virtual net becomes more difficult. Sprint and MCI require a customer to use network remote access options, such as an 800 number or a calling card, to connect the cellular phone into the virtual net. Inbound calls are forwarded to the cellular user via the standard roaming service provided by the customer's cellular carrier.

AT&T, however, provides a slightly better option. In certain cellular service areas, AT&T has agreements with the cellular provider for enhanced call processing. In these areas, customers can make direct outbound calls as if they were an on-net SDN station, which obviates the need to use network remote access options.

In order to provide this capability, AT&T must load every customer cellular service number into every switch that it has connected to the participating cellular providers. Loading these numbers into the switches enables the AT&T network to recognize these cellular users as SDN callers.

AT&T will likely improve its support for cellular callers in SDN, thanks to its acquisition of McCaw Cellular Communications, Inc. MCI's purchase of Nextel Communications, Inc. will aid it in improving wireless access to Vnet. Sprint's acquisition of Centel Cellular Properties — now called Sprint-Cellular — should enable it to offer similar capabilities, although over a limited area.

With so many services being pulled under the virtual net umbrella, coordinated billing and net management take on heightened importance in the selection process.

MCI was the first to roll out a revamped billing system for virtual network customers in October 1990 and is now focused on providing additional flexibility. MCI's focus has been on providing mainstream applications of cross-product billing and invoicing.

To meet its goal of providing users with better on-line access to billing information, MCI has been migrating from an IBM 3270-based architecture to a Windows-based workstation environment. The carrier's Portfolio and Location Level Billing products enable users to more easily tap in to the Vnet billing system as well as give them the ability to create nine levels of billing hierarchy.

New releases such as MCI's Sentry, which enables users to proactively monitor Vnet circuits, and Direct Dispatch, which enables customers to create their own on-site trouble management system, are the first in a series of planned network management enhancements for this year.

MCI's recently completed acquisition of BT North America, Inc., is expected to bring additional net management capabilities to the Vnet service this year.

AT&T and Sprint have made major changes to improve billing, as well. AT&T rolled out a new billing system for its SDN customers in April 1993, and Sprint recently brought VPN Premiere onto its Invoice Processing System (IPS) cross-service billing platform.

Today, many of AT&T's most advanced billing capabilities are housed in its new SDN billing architecture, which will also be used to support the OneNet offering when it becomes available. Enlisting the support of SDN customers, AT&T started designing the new SDN billing architecture in 1990 when it went to work with customers to redesign the basic SDN bill format. AT&T completed the retrofit of its older SDN billing system , which was an adaptation of a private line billing system, in April 1993.

AT&T's older SDN billing system was designed for a flat rate-based service and was ill-suited to handle SDN's usage-based pricing. As a result of revamping the old system, AT&T now has expanded capacity, allowing it to run multiple copies of the SDN billing software simultaneously. Thanks to the system's three- to four-fold increase in processing speed, AT&T now guarantees bill delivery in 15 days after the close of a billing cycle. Early reports indicate that 60% of SDN customers receive bills within 10 days of a billing cycle close.

AT&T has also announced its Customer Direct Platform, a personal computer-based product for managing SDN billing and administration. The Customer Direct Platform includes three modules: Network Administration System (NAS), Service Request System (SRS) and SDN Billing Edge.

NAS enables users to assign billing hierarchies to SDN locations and rearrange dialing plans. SRS is used to order new lines and circuits, while SDN Billing Edge provides electronic billing capabilities. The Customer Direct Platform lacks the ability to perform hard-core network management tasks, such as tracking network performance and managing traffic flows — functions that require AT&T's more powerful Accumaster Services Workstation.

Sprint has likewise overhauled its billing architecture and is working to improve its thus-far weak network management capabilities. With VPN Premiere, Sprint has moved from storing virtual network databases and call routing instructions on network switches to a centralized database that is tied into the IPS billing system. Sprint's older architecture precluded it from providing a significant amount of real-time data for billing management.

IPS generates bills for all segments of Sprint's business, including VPN Premiere as well as its 800 and switched data offerings. Customers of Sprint's VPN were the first to use IPS when it was rolled out last November following four years of development.

Sprint will also provide a hook between its Insite Executive net management platform and its IPS billing system for enhanced virtual net billing and service integration. Insite Executive is an Open Systems Interconnection-compliant management package running on a Sun Microsystems, Inc. workstation and eventually on a PC.

Although Sprint officials declined to provide details, the carrier intends to develop a software module that will enable Insite Executive users to tap into IPS and perform VPN Premiere traffic management and administration functions. It's unlikely the module will be available before 1995. If it is equal in quality to what Sprint has done with its 800-traffic management module, Sprint will improve its network management so it is close to being on equal footing in this area with AT&T and MCI.

On a related front, both AT&T and Sprint have ironed out the wrinkles in providing users with the voluminous amounts of call detail data generated by virtual networks. Both provide billing data on CD-ROM and offer PC-based software that enables users to generate custom billing reports using that data.

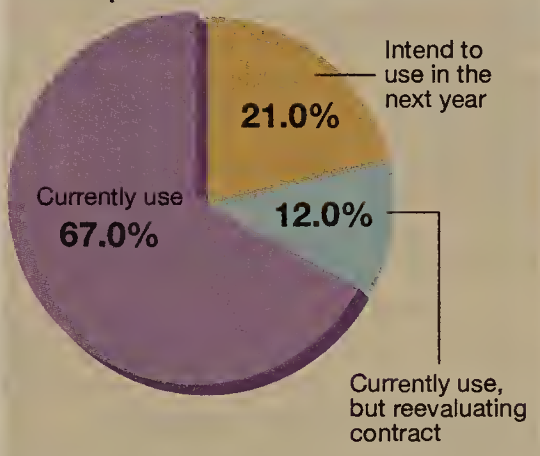
The AT&T SDN Billing Edge and Sprint FONView PC-based software products read preindexed billing data directly from a CD-ROM, which accelerates the generation of bill-

Continued on page 42

Reader views on virtual private network services

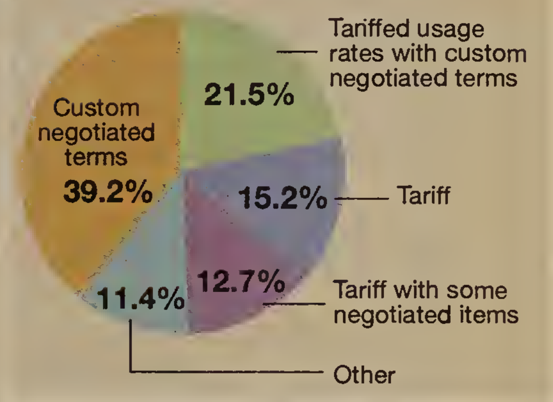
Based on 100 interviews.

Do you use or plan to use a virtual private network service?



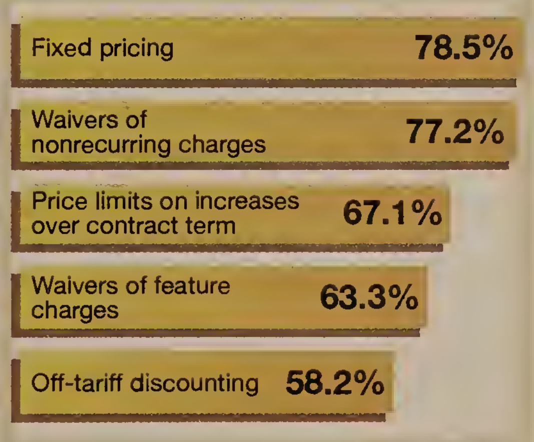
How is your contract structured?

Based on 79 current users.

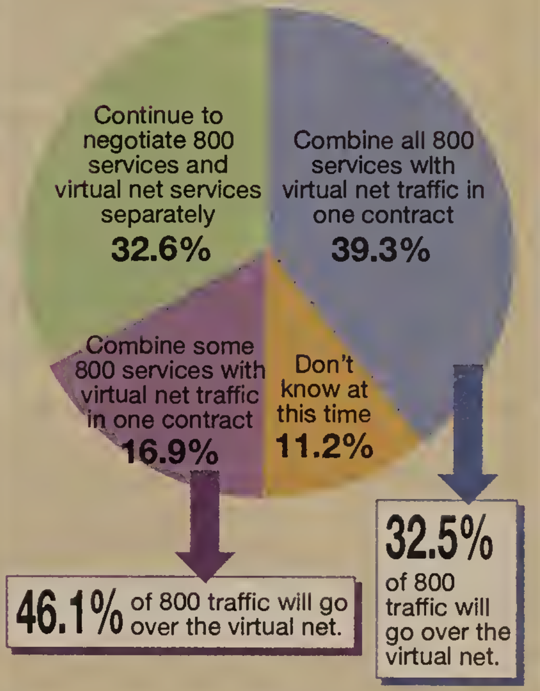


Which of the following contract items have you negotiated to slow rising costs of virtual private networks?

Based on 79 current users.
Multiple responses allowed.



With the advent of 800 portability, you will:



Top factors in evaluating virtual private network services

Based on highest possible score of 7.

Operational/reliability	5.67
Price	5.60
Service/support	5.03
Network management	3.40
Features	3.06
Billing/reporting	3.05
International capabilities	2.40

The information in this graphic illustrates key findings of a recent *Network World*/Focus Data, Inc. reader survey on virtual private networks. Focus Data, an independent market research firm in Framingham, Mass., conducted the survey and tabulated the results. For more information on Focus Data services, call (508) 626-2556.

GRAPHIC BY SUSAN SLATER

Continued from page 41

ing reports.

Past PC-based billing management programs delivered data via diskette or on-line. Since the information sent to a $40,000-per-month customer requires approximately 100M bytes of storage, this caused disk storage problems. By preindexing call detail data according to such criteria as type of call, day of the week the call was made and who made calls, reports can be generated in seconds, greatly reducing hard-disk storage needs.

MCI also has a PC-based billing report generator, but it has a significant shortcoming. The Perspective for Vnet product does not yet provide preindexing of billing data. Consequently, the package must read data off the CD-ROM and write it to the PC's hard drive, which makes it run slower than SDN Billing Edge and FONView (*NW,* Jan. 31, page 39). Perhaps even more disconcerting is Perspective for Vnet's requirement for users to dedicate large amounts of disk storage to billing report generation.

Another critical selection point is how well carriers protect their users against fraud. All three carriers have launched toll fraud offerings during the past 18 months that cover a number of services, including virtual networks.

The one thing each carrier will do for free is monitor service usage for unusual calling activity. If the carrier notices potential toll fraud, it will notify the customer or take specified actions such as shutting down circuits. All three carriers also provide consulting services that are designed to help users take measures to protect themselves against toll fraud.

While monitoring and consulting provide a certain level of protection, users should look to AT&T and Sprint if they want extended coverage that includes liability limits.

AT&T provides four levels of fraud protection under its SDN NetProtect product. Plans range from the basic free monitoring service to NetProtect On-line Call Detail Data/Real Time, an on-line call detail data service that permits user access to calling data on a real-time basis from a PC. AT&T also provides a service under which it will accept liability for fraudulent calls up to specified amounts, in some cases as low as $25,000.

Sprint offers its SprintGuard service to protect against toll fraud. The basic SprintGuard service, which is free, provides customers with fraud monitoring for domestic and international traffic, as well as immediate customer notification when fraud occurs. Under its enhanced offering, SprintGuard Plus, the carrier will assume financial responsibility for any fraud costing between $10,000 and $1 million.

AT&T and Sprint have specific terms regarding the types of fraudulent events that they will cover with liability limits. AT&T, for example, has time restrictions on its liability coverage. After two hours of being notified of potential fraud, the customer accepts full liability for not only the location affected by the fraud incident, but also all locations that have a connection to the affected site.

There are more than 3,000 virtual private networks installed across the U.S.

An important caveat for users whose virtual net is connected to a private network is to make sure the virtual net is disconnected from an affected location in order to be covered.

MCI's MCI Detect provides monitoring of domestic and international traffic for fraudulent call patterns and customer notification. Additionally, the carrier extends 20% discounts to the purchase of third-party customer premises equipment that can be used for hacker prevention. In terms of liability, though, MCI Detect falls far short of products from the carrier's competitors. For fraud liability, MCI refers customers to a third-party insurer.

FUTURE SHOCK

In the short term, virtual network services will continue to be the primary voice service for large end users, which can expect to see carriers improve on their ability to link switched data and 800 services into the billing, administration and management tools used with virtual nets.

In the long run, the virtual net's primary role of providing outbound voice telephone service will expand as other forms of traffic, such as inbound 800 and videoconferencing, become tightly integrated within the virtual net database. That virtual net database will store customer billing and feature preferences, as well as serve as the foundation for providing

Continued on page 48

CORRECTION

Due to data entry and verification errors, the listing for Northern Telecom, Inc.'s Meridian Mail product in the Jan. 24 voice processing system Buyer's Guide had inaccuracies. The company's phone number is (800) 667-8437, the product has two to 192 ports, up to 42,000 voice mailboxes, and comes with an application generator and rotary phone support.

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Featured Speaker: Dr. Jerry Marin, Manager of High-Bandwidth Networking, IBM

3) Network Management Solutions for ATM
Featured Speaker: Roger Kosak, Advisory Programmer, Network Systems, IBM

4) ATM as an Enterprise Backbone Replacement Architecture for Multiplexing
Chair: Frank Dzubeck, President & CEO, Communications Network Architects
Panelists: R. Bruce McClure, Senior Vice President and General Manager, Ascom Timeplex
Desh Deshpande, Executive Vice President, Marketing & Customer Service, CASCADE

5) ATM: Implications for the Enterprise WAN
Moderator: Rick Malone, Principal, Vertical Systems Group
Panelists: Gail Smith, Director Worldwide Product Marketing, Motorola Codex
Greg Crosby, Director Data Product Management, Sprint
Timothy Zerbiec, Vice President, Advanced Technology, Ascom Timeplex

6) Bringing ATM to the LAN
Chair: Robin Layland, Layland Consulting
Panelists: David Rubal, ATM Specialist, Cisco Systems
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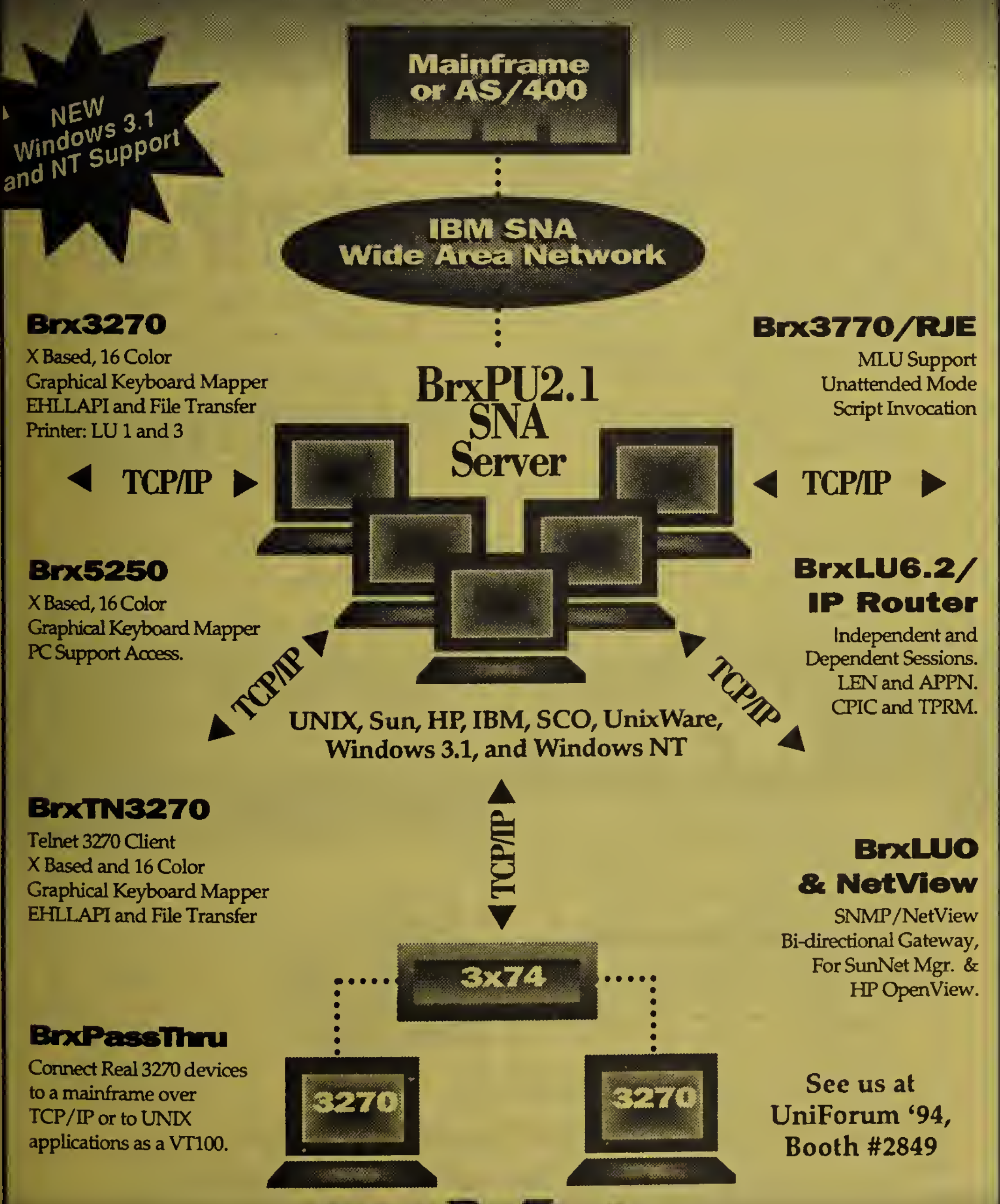
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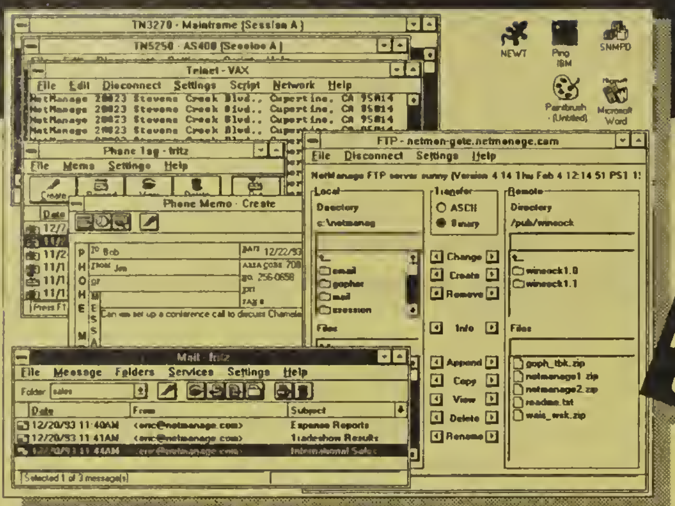

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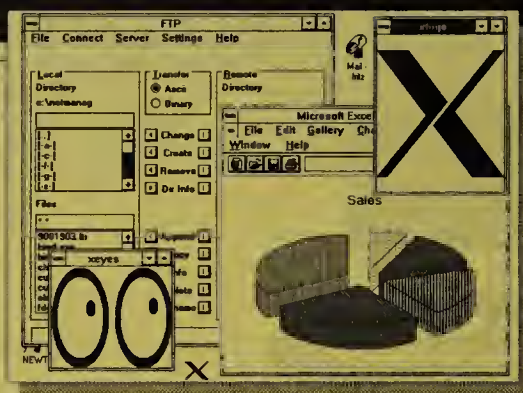

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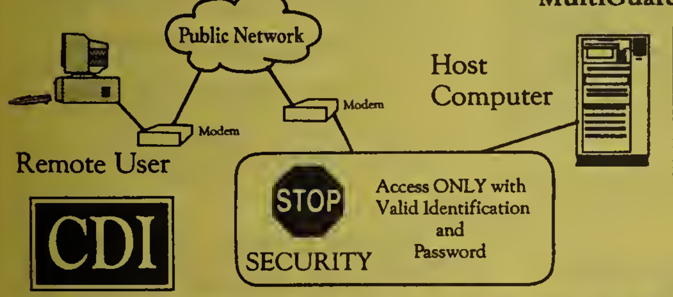

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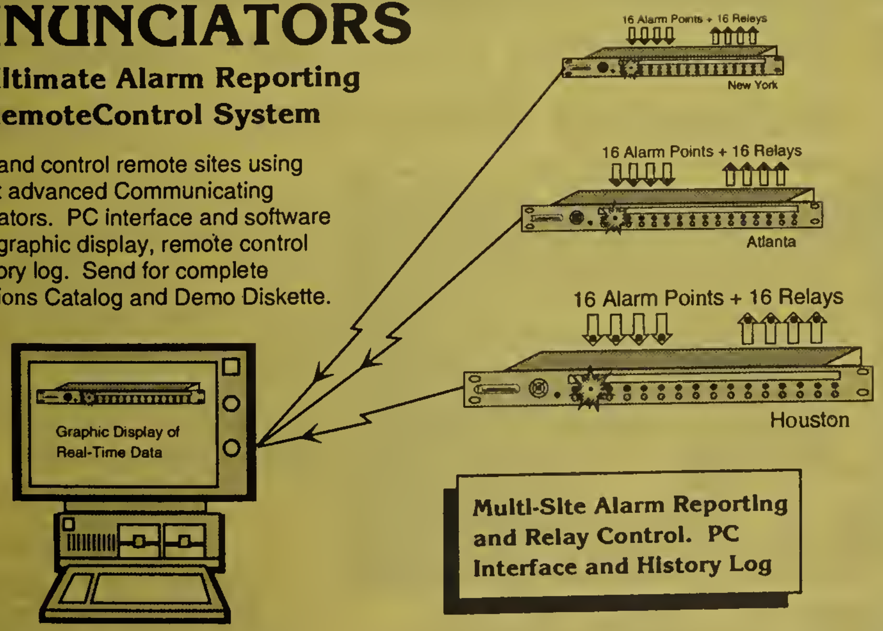

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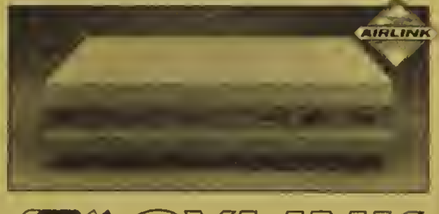

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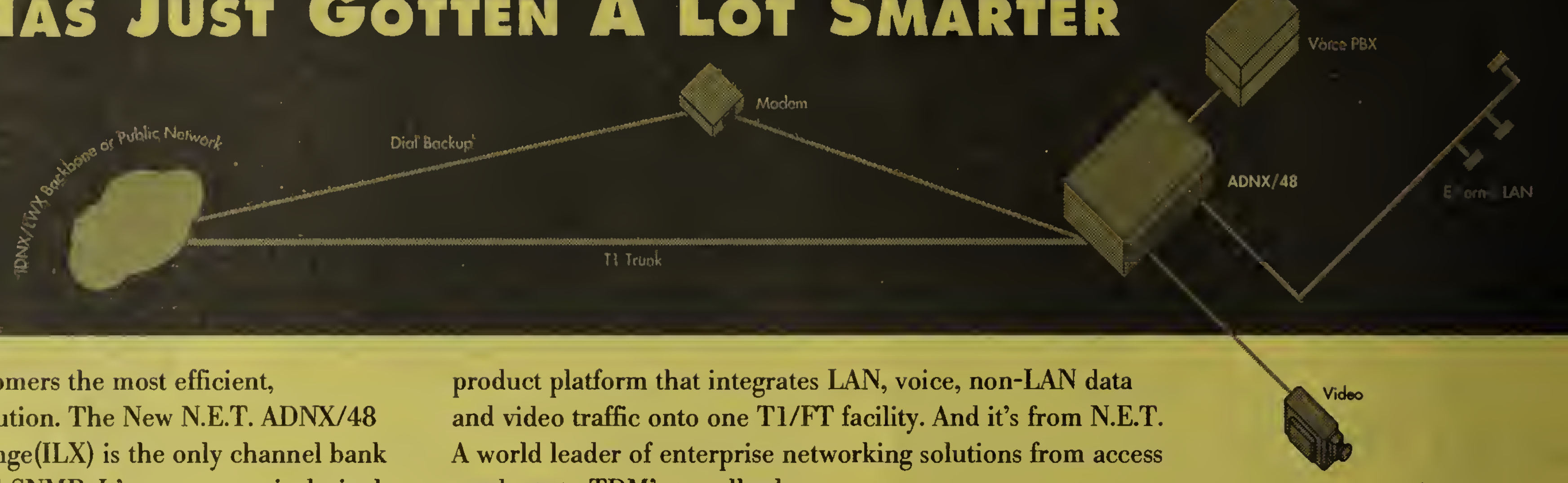

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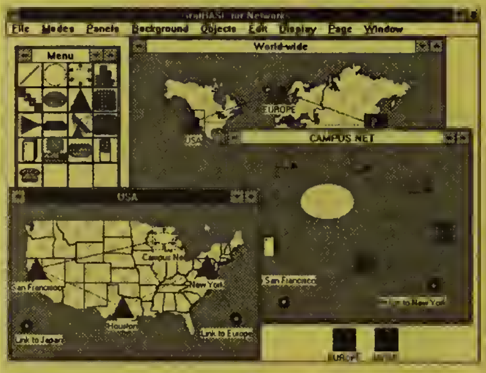

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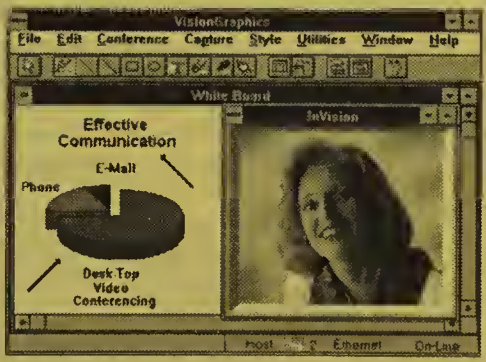

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tative at Corporate Software, Inc., a software support and systems integration company based in Canton, Mass., replies:

The maximum length of coaxial cable you can use depends on whether it is thin or thick Ethernet coaxial cable.

The maximum length of cabling for thin Ethernet is 607 feet between nodes (PCs or servers) on the same segment. You can have as many as five 607-foot segments, each connected with a repeater. A maximum of three segments can each have up to 30 nodes attached; the other two segments, which can only have repeaters attached, are used for extending the distance between segments. Each repeater also requires a node connection, so a segment with two repeaters can only have 28 nodes.

Thus, a maximum total of 86 nodes can be connected on one LAN with thin Ethernet, and the maximum total length of cabling cannot exceed 3,035 feet.

For thick Ethernet cabling, 1,640 feet per segment is the maximum. You can have as many as five segments, each connected with a repeater. Up to three of the five segments can each have a maximum of 100 nodes, which are attached through an external transceiver to a drop cable, which is then plugged into the node.

A maximum total of 296 PCs can be connected to one thick Ethernet LAN, and the total length of cable for all the segments must not exceed 8,200 feet.

Letters

Continued from page 35

works" (Feb. 21, page 14). I am a noncustodial father who has never had problems providing support for my son. But in the first sentence of this article I felt that I was being unfairly labeled as a "deadbeat dad." I understand that other phrases referring to noncustodial parents who do not pay child support do not make as great an impact as this derogatory term.

But I, and many like me, do make the effort to financially and emotionally provide for our children. I hope that in the future, you and your reporters could refrain from using this and other degrading terms.

Dev Watson
Waycross, Ga.

Messmer replies: "Deadbeat dad" is a term used to describe only noncustodial fathers who fail to make their child support payments, not noncustodial fathers in general. Fathers who fulfill their responsibilities are not "deadbeat dads" any more than good motorists are "hit-and-run drivers."

The value of R&D groups

I enjoyed Douglas Welch's recent article on network R&D groups (Feb. 14, page L2). I belong to a corporate R&D group and know firsthand the value it can provide to a company by retaining experienced employees and fueling innovation. Unfortunately, our R&D group's charter remains vague in its scope, and day-to-day support and technology ownership issues sometimes block our efforts. Welch's point about an R&D group's autonomy is a good one, as well. Also, there needs to be a well-defined means of technology transfer: When an R&D group develops a new product, service or modification, the training and hand off to the operations groups need to be smooth and clean. Otherwise, the R&D group will find itself back in a support role.

Again, thanks for the article. Keep up the good work.

Darrell Rials
Project engineer
Halliburton Co.
Arlington, Texas

Seeks DSU info

Could you please tell me if you have published an article comparing data service unit (DSU) products? If so, what is the publication date? Your help in this matter will be greatly appreciated.

Ellis Claggett
Data networks engineer
The Travelers Corp.
Baltimore

Editor replies: A Buyer's Guide to DSUs appeared on page 31 of the Aug. 26, 1991 issue.

Virtual nets

Continued from page 42

information to network and administration management applications.

Services such as inbound voice, outbound voice and data will feed into these systems as inputs. Customers will then merely choose from a menu of service options and features under a single contract.

Indeed, driven by the intelligence now embedded in carrier networks, virtual net databases will surely grow to maintain the information needed to support establishment of frame relay and Asynchronous Transfer Mode connections between locations.

In the meantime, SDN, Vnet and VPN Premiere will continue to be assailed by other services modeled on the concepts of virtual networking.

High-end WATS services, such as Clarity, Uniplan and Vision, will continue to blur the line between virtual networks and other classes of service.

While these services may or may not be provided from the same carrier switching platforms, the types of services and individual features offered with these services will continue to close the gap between traditional virtual network services and other outbound calling offerings.

However, AT&T, MCI and Sprint will retain their leadership roles in providing virtual network services.

Head-on competition between virtual networks and virtual network-like services remains highly unlikely.

When all is said and done, though, the bottom line for customers will continue to be the per-minute price of virtual private network calls.

Sprint may have broken new ground with its VPN Premiere service pricing, but it's unlikely that AT&T and Sprint will follow suit.

Instead, all three carriers will be very aggressive about altering part or all of their pricing and discount structures in order to win business. And that is the one thing that will likely remain unchanged during the foreseeable future.

➜ Briere is president and Langner is a senior analyst at TeleChoice, Inc., a Verona, N.J., consultancy. They can be reached at (201) 239-0700 or via MCI Mail at 445-4690.

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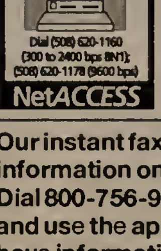
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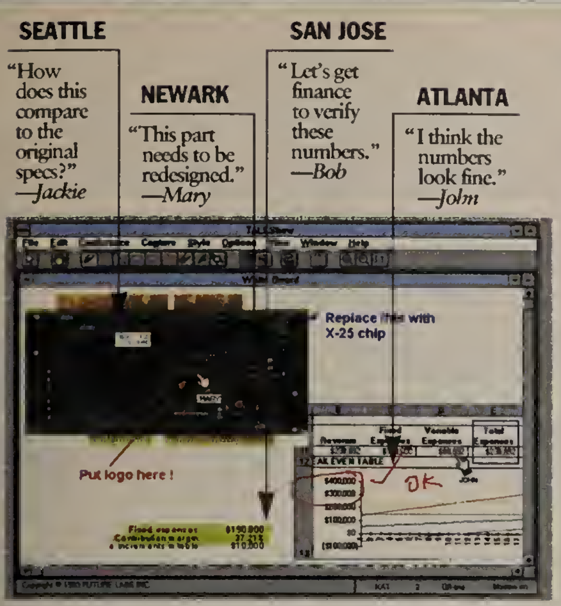
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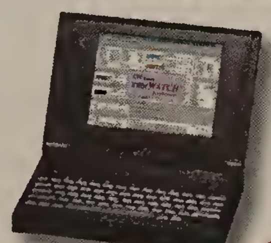

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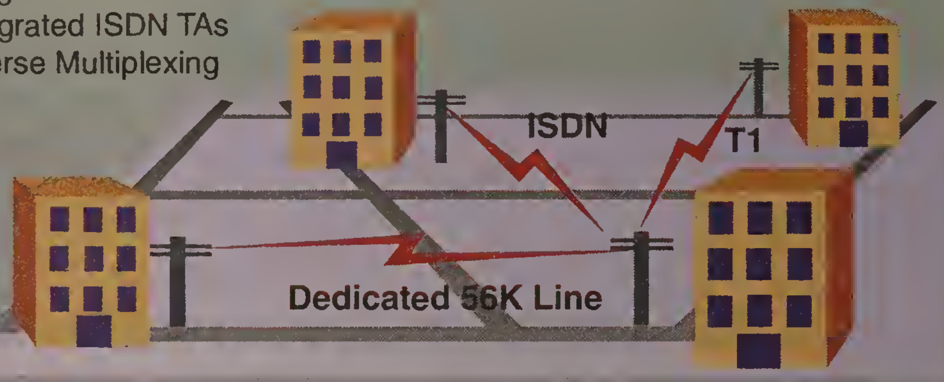

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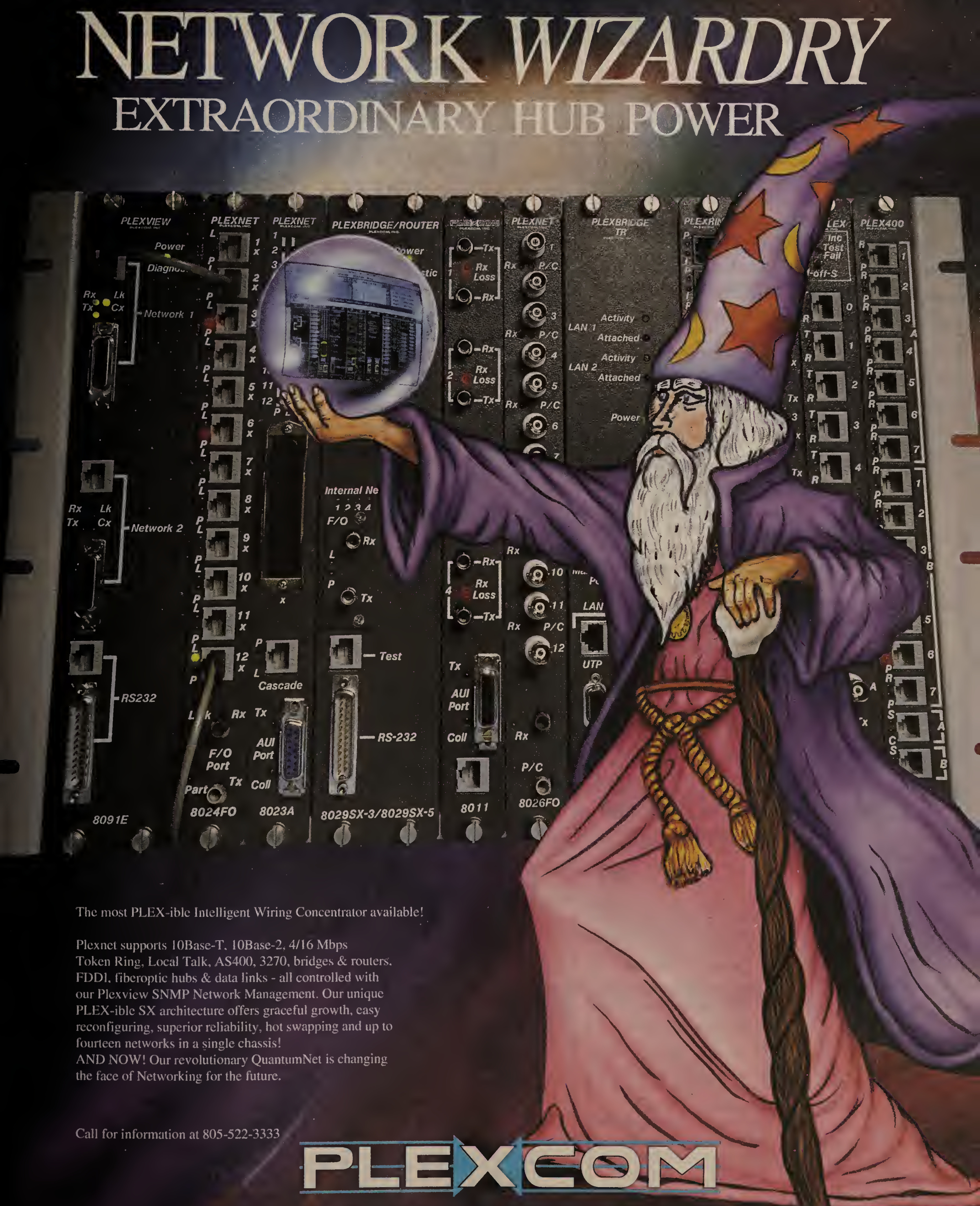

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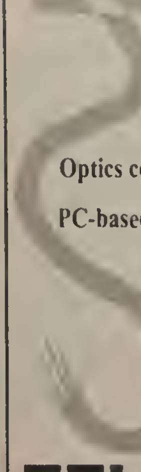

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ALLIANCES

Cabletron, Fore get more cozy with new ATM deal

BY SKIP MacASKILL

Rochester, N.H.

Cabletron Systems, Inc. and Fore Systems, Inc. said last week they will integrate Fore's Asynchronous Transfer Mode (ATM) technology into Cabletron's next-generation MMAC-Plus switching hub.

Under the arrangement — an extension of an existing OEM deal — the companies will deliver an ATM switch module by year end that will allow users to incorporate cell switching functionality across an enterprise backbone and ensure interoperability between the Cabletron device and Fore's ATM technology.

The new deal

Highlights of Cabletron-Fore alliance.

- **3-year contract.**
- **Worth $12 million to Fore.**
- **Fore will develope an ATM switch module for Cabletron's MMAC-Plus hub.**
- **Allows Cabletron to continue reselling Fore's stand-alone ATM switches and ATM adapter cards.**

Cabletron will pump $12 million into Fore, which will design and manufacture the module, to cover development costs and volume purchases of the modules. The companies' original OEM agreement, signed in November 1992, allowed Cabletron to resell Fore's stand-alone ForeRunner ATM switches as well as its ATM network interface cards.

Fore's MMAC-Plus ATM switch module will offer a nonblocking switching capacity of 2.5G bit/sec as well as support for fiber- and copper-based ATM interfaces running at 155M, 100M and 45M bit/sec. It is expected to be available by year end, at which time pricing will be announced.

Cabletron announced the MMAC-Plus last month and will begin shipping the 14-slot switching hub in May. The device supports all traditional local-area network technologies, as well as integrated routing and switching capabilities.

According to industry analysts, Cabletron needed a deal like this to strengthen its ATM strategy and to improve its position vs. other vendors. SynOptics Communications, Inc. has developed its own ATM technology, while Cisco Systems, Inc. is developing an ATM switch module for its router line with NEC Corp.

"Cabletron couldn't develop its own ATM from the ground up" in time to meet market needs and beat competitors to market, according to Todd Dagres, vice president of equity research at The Robinson-Humphrey Company, Inc., an investment firm in Atlanta.

While Cabletron is embracing Fore now, the ATM switch vendor will not be the only ATM vendor in Cabletron's long-term plans, acknowledged Greg DeMund, director of business development at Cabletron.

"We won't only be supporting Fore in the future, but today, Fore is our only partner," he said. "We will continue to concurrently develop our own ATM technology in-house."

Regardless, Fore will benefit now by gaining access to Cabletron's large installed base and the $12 million cash infusion, said Mark Juliano, Fore's vice president of marketing.

"This expanded relationship gives us a direct inroad to the super hub market, which will be using ATM extensively in the future," he said.

Fore can expect to generate even more capital later this month when it files its initial public offering. According to industry sources, the expanded Cabletron-Fore arrangement came about after Fore rejected a buyout bid from Cabletron just two months ago. A Cabletron spokesman denied the report.

Fore's deal may preclude the ATM switch vendor from working with other hub vendors in similar ways, Dagres said. Fore currently has an OEM agreement with 3Com Corp., whose ATM strategy is to combine its NetBuilder II router with a Fore switch in collapsed backbone setups.

"The 3Com-Fore partnership was more a matter of convenience for 3Com so it could show users it had an ATM strategy and was serious about the technology," Dagres said. "3Com, however, might not need Fore too much longer since it gained ATM technology that Synernetics, Inc. had under development when it acquired that company last December."

☎Cabletron: (603) 332-9400; Fore: (412) 772-6600.

Oracle set to intro low-end version of its LAN database

BY PETER LISKER

Redwood Shores, Calif.

Oracle Corp. will announce this week a low-end version of the Oracle database server, dubbed Oracle EasyLAN, for Microsoft Corp.'s Windows NT and Windows 3.1 operating systems.

In addition, the company has announced the availability of the Cooperative Development Environment application development tool set for Apple Computer, Inc. Macintoshes.

EasyLAN, along with OracleWare, expands Oracle's offerings for departmental users. OracleWare, announced last year, is a version of the Oracle database tailored for Novell, Inc. NetWare 3.11 networks.

The new product will let NT servers connect Windows users with the full range of platforms currently supported by an Oracle7 database.

EasyLAN will feature quick installation, will be largely self-tuning and will feature a subset of administration capabilities designed to make it more accessible to local-area network users.

"Our announcement will show Oracle is serious about being the leader in the low-end server market," said a source close to Oracle. "EasyLAN will bring the power of the Oracle database engine to the departmental level, with all the connectivity and portability that is critical to our users."

EasyLAN will be followed within two months by new client software for the Oracle database engine that provides better support for mobile users employing dial-up or wireless connections. The new client software will also run on personal digital assistants using client communications software developed by General Magic Corp.

The Oracle announcement is an early salvo in what should be a fierce war waged by the database vendors in the rapidly expanding departmental database arena. Sybase, Inc. is expected to announce a version of SQL Server within the next two months that will compete directly with EasyLAN. In addition, Microsoft, which has licensed SQL Server from Sybase, has been refining its version of the product to appeal to users in the potentially lucrative low-end database market.

"The entry of Oracle is a sign that the market is ripe for departmental database solutions that provide connectivity."

"We expect to see a growing awareness and competitive stance among the database vendors for the low-end market," said John Morrell, vice president of advanced operating environments for Framingham, Mass.-based International Data Corp. "The entry of Oracle is a sign that the market is ripe for departmental database solutions that provide connectivity to the enterprise database environment."

Separately, Oracle made some moves in the application development market, announcing availability of the Cooperative Development Environment (CDE) for Macintoshes. CDE is an integrated suite of tools for building enterprisewide applications.

CDE components include Oracle Forms, Oracle Reports and Oracle Graphics, in addition to the previously available Oracle Browser, Oracle Card and Oracle Book.

The products allow developers and users to create applications on the Macintosh that can be ported to other operating environments without having to rewrite the application code.

"We've used the Macintosh CDE products for over five months in beta and have found them to be remarkably stable and useful," said Garrett Fuhm, group leader of manufacturing support systems for Westinghouse Nuclear's Savannah River nuclear facility, located in Aiken, S.C. "The availability of the CDE environment tools for Macintosh has allowed us to develop and deploy applications that can be used on both PCs and Macintoshes."

All products are available immediately at prices ranging from $250 to $1,295.

☎Oracle: (415) 506-7000

Comments?

See "Contacts" box on page 2.

Microsoft

Continued from page 8

architected mail system that requires Windows NT and is built on a true client/server model.

The enhanced Microsoft Mail product will use the current file-sharing architecture. New back-end and client components will ship as part of this new product, although most of the improvements are on the client side. These include built-in workgroup functions such as forms routing.

The Windows NT-based component will also ship as two parts: a new back end and a new client. Both pieces will include new functionality.

Because of the client/server architecture, the back end will include administrative and management tools, which current file-sharing systems do not offer. The client piece is actually the same piece of software that will ship with the file-sharing version, so it will include the workgroup functions, as well.

Most E-mail systems today are based on file-sharing models in which the client carries most of the work load, such as mail routing, and the server plays a passive role as a data-store facility. In a true client/server E-mail system, the work load is better balanced. The server or back-end software would be designed to handle the E-mail management functions, and the client would handle the end-user functions.

Microsoft is packaging Touchdown as a two-server product and, to avoid questions about compatibility, will push the concept of a single client that works with both Touchdown servers.

Touchdown will be the first implementation of what Microsoft refers to as the universal client. Long term, Microsoft will provide it as a common in-box for a back-end services, such as E-mail and databases, as well as outside services, such as CompuServe.

NETWORK WORLD

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CrossComm

Continued from page 1

needed, but the two companies have definitely come to an understanding."

The deal will allow CrossComm to enhance its product line with support for IBM's Data Link Switching (DLSw) technology as well as bolster its non-Systems Network Architecture router offerings. It would allow Proteon to shed the high development costs required to remain competitive in the cutthroat internetworking market and focus on its local net adapter card business, which generates 65% of its revenue.

"I can't tell you [if speculation about CrossComm buying Proteon technology is] true, and I can't tell you it's not true."

-Tad Witkowicz

CrossComm sought permission from the SEC two weeks ago to buy a large block of Proteon stock. If SEC approval is granted, CrossComm would then need the approval of its shareholders before the deal could be completed, which could be within three to six months.

Sources said it is likely that CrossComm will acquire one-third of Proteon's 14 million outstanding shares, which would put the value of the deal somewhere between $30 million and $40 million at Proteon's current stock price. Federal regulations require SEC notification when more than 5% of the stock in a publicly held company is acquired.

CrossComm has more than enough capital to handle a deal that size. Its most recent financials indicate that it had more cash on hand — $60 million — than it recorded in annual revenue last year — $49.8 million.

The firm's recent financial statement showed no long-term debt and record revenue in both the fourth quarter and fiscal year ended Dec. 31, 1993. Revenue for that quarter was up 63% from the same period last year, while the full-year $49.8 million revenue represents a jump of 70% over fiscal 1992.

Because of a disappointing trend in bookings last month, however, the company last week announced it was lowering its revenue and earnings expectations for the current quarter, which will end on March 31.

In its most recent financial statement, Proteon recorded big losses for the fourth quarter of 1993 as well as fiscal 1993, both of which ended on Dec. 31, 1993. The company recorded a loss of $13.6 million for that quarter, which included a $5.3 million restructuring charge. For fiscal 1993, Proteon had a net loss of $19.3 million.

Proteon's current internetworking line includes the CNX 600 router for corporate backbone environments; the CNX 500 router for large regional offices; the DNX300 and DNX 350 routers for remote sites and branch offices; and the p4100+ router for workgroups.

Proteon also has a high-end Series 90 Intelligent Hub that supports both token-ring and Ethernet nets; the Series 70 Intelligent Wiring Center, which is a modular IBM-compatible multistation access unit. The company also offers a combination hub/router — the ProNet Branch Office Solutions — as well as its ProNet-4/16 family of token-ring adapter cards.

By acquiring Proteon's internetworking offerings, CrossComm will widen its product line. Currently, it offers the ILAN XL80 and XL20 routers optimized to route SNA and Network Basic I/O System traffic.

In an interview with *Network World* last week, Tad Witkowicz, president of CrossComm, said part of the company's plan this year was to gain non-SNA routing and hub expertise through acquisitions.

When asked about a possible Proteon acquisition, Witkowicz said, "I can't tell you it's true, and I can't tell you it's not true." He admitted that Proteon offers technologies CrossComm is seeking but noted that it "carries a lot of baggage."

Proteon was equally noncommittal. "We have stated publicly that we are exploring acquisition and partnership options with a variety of companies," said Lacey Brandt, director of investor relations at Proteeon. "It would be inappropriate to comment on any specific names at this time."

Acquiring those Proteon product lines "would make a lot of sense for CrossComm because it gives them DLSw, token-ring capabilities and a branch office routing solution," said Todd Dagres, vice president of equity research at The Robinson-Humphrey Company, Inc. in Atlanta. "Since Proteon has standardized on a hardware-independent platform with its routers, it wouldn't be difficult for CrossComm to meld Proteon's routing architecture with its own."

CrossComm preps ATM rollouts

In an interview with *Network World* last week, CrossComm Corp. President Tad Witkowicz sketched out a broad picture of his company's future, including plans to offer ATM and Ethernet switching products.

Witkowicz said CrossComm will provide a suite of Asynchronous Transfer Mode (ATM) switching products that will work with its ILAN XL80 router line to provide ATM connectivity across corporate backbones and access to ATM network services.

He also acknowledged that the company was developing an Ethernet local-area network switch with an ATM uplink as well as a line of low-end routers designed for small to midsize branch offices.

Rounding out the list of future offerings will be a new management application for CrossComm's Internetwork Management System (IMS), which will enable users to monitor wide-area network links.

On the ATM side, CrossComm is working with an unnamed WAN partner to develop a 155M bit/sec Synchronous Optical Network Optical Carrier-3 interface for its high-end ILAN XL80 router that will enable the device to directly access private and public ATM-based network services.

The firm is also working with an ATM switch vendor that it declined to identify to develop ATM switch modules for the XL80 that will take advantage of the device's 2.6G bit/sec matrix switch architecture.

The 16-port modules will support a variety of ATM speeds from 25M to 155M bit/sec and enable the XL80 to act as a cluster device supporting other routers in an enterprise network and providing ATM switching across the backbone.

CrossComm is also ready to roll out its first LAN product in the form of a stand-alone Ethernet switch that will provide dedicated 10M bit/sec links to the desktop. The LAN switch, which will support between 12 and 16 10Base-T ports, will feature an ATM uplink for attachment to a stand-alone ATM switch or an XL80 switch module.

CrossComm rival Cisco Systems, Inc. recently unveiled its own LAN switch, but it, like almost all other Ethernet switches on the market, features a Fiber Distributed Data Interface uplink, not an ATM backbone connection like the CrossComm device. CrossComm will buy exclusive rights to LAN switching technology from a start-up in order to build the box. It is currently in negotiations with that company, which it declined to name.

The ATM interface, ATM switch modules and LAN switch should be announced and shipping by the beginning of next year, according to Witkowicz.

CrossComm also plans to roll out its first family of remote site and branch office routers. The XL10, XL5 and XL2 will offer one Ethernet or token-ring interface each and from one to three wide-area interfaces. The routers will provide dial-up capabilities as a backup in the event a primary WAN connection fails. The devices, which will support frame relay and Integrated Services Digital Network links, will be able to deliver throughput of between 28K and 56K bit/sec over the dial-up links via data compression. The routers will support the Simple Network Management Protocol and offer integrated Remote Monitoring capabilities, as well.

The jewel of this new line will be the Integrated Branch Node (IBN) — essentially a token-ring branch office in a box that supports hub and router functionality.

The device will support as many as 15 end node connections via an integrated multistation access unit and a single Synchronous Data Link Control connection to support Systems Network Architecture devices such as 3174 cluster controllers.

Also, the device will feature an integrated data service unit/channel service unit, a V.fast modem and the ability to convert SDLC traffic to Logical Link Control 2 packets for transport over an Internet Protocol-based net.

The XL10, XL5, XL2 and IBN are all expected to be rolled out later this month. Pricing will be announced at that time.

On the management side, CrossComm is prepping a new IMS application, dubbed WAN Link Monitor, that will let net administrators monitor the status of WAN lines and analyze the traffic crossing them. It is expected to be rolled out next quarter.

©CrossComm: (508) 481-4060.

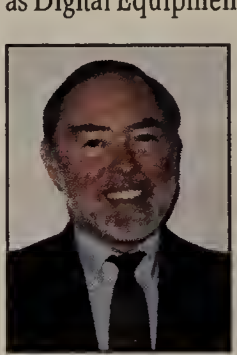
BY SKIP MACASKILL

CoREN

Continued from page 1

Together, CoREN members account for about 40% of the Internet backbone traffic today, a whopping 4 terabytes of information per month. They are counting on competition in Internet services to hold down costs so they can serve their growing number of business customers, which are increasingly exchanging large multimedia files electronically.

At NEARNet, operated by BBN Technologies Services, Inc. in Cambridge, Mass., 40% of network traffic is generated by commercial users, companies such as Digital Equipment Corp. and Bull Information Systems, Inc., said Vice President John Rugo.



STAMAN

That's a problem because federal subsidy of the Internet T-3 backbone services, which are now provided by Advanced Network & Services, Inc. (ANS) for the regionals, will end as early as this October or as late as March 1995, depending on how smoothly the transition plan mapped out by the National Science Foundation (NSF) proceeds.

To help the regionals adjust to life without the subsidized NSFNet backbone, NSF will provide them with direct funding to let them connect to each other on their own terms. But NSF has made it clear it will pay only for education-related traffic, not business use. This subsidy will gradually dwindle from 100% to zero in four years.

THE DAY WILL COME

"NSF told us for years, 'The day will come when you have to pay for your share of the backbone superhighway,' " said Mike Stamen, president of CICNet, which provides Internet access for the Big Ten universities of the Midwest and several state networks.

Both Rugo and Stamen said they would consider outsourcing their entire regional networks to IP service providers if the carriers could make it cheaper for them to provide the end service to customers.

"The minute I can buy it more cheaply from a commercial vendor is the minute I'm out of this business," Stamen said.

But the same growing competition in Internet services that CoREN members are counting on to keep them going may ultimately lead to their demise as regional IP networks, said Joel Maloff, president of the Ann Arbo Mich.-based consultancy The Maloff Co.

"It's a real question whether all eight of thes regionals will be around in five years," Maloff sai "There's a rapidly growing number of new entrepre neurial companies going after their bread and butte — the commercial customers."

Putting it in perspective

CoREN member networks handle 4 terabytes of data per month — the equivalent of 4,000 gigabytes, 4,000,000 megabytes or approximately 2 billion pages of printed information. According to ANS President Al Weis, that is roughly half the contents of the Library of Congress.

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Vendors must contact *NW* no later tha March 25 to receive a survey form.

MAXM

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manager communications, letting MAXM servers be strung together to provide unified control of large distributed networks.

This will let users with two or more distinct nets controlled by MAXM servers designate one as the control center. For example, a user with networks in New York and London could transfer control from one to the other for overnight management or in the event MAXM goes down at one of the sites.

"It's important that we be able to tie our management systems together so we can segment them if necessary or for backup in the event of failure," said Ben Faul, principal scientist with Infonet Services Corp. in El Segundo, Calif. Infonet uses MAXM to manage its multivendor worldwide voice and data environment. "Our networks and users are spread all over the world, and we'd really like to be able to see everything anytime we want," he said.

According to Todd Dagres, vice president of equity research at The Robinson-Humphrey Company, Inc., an investment firm based in Atlanta, "This feature would create peer management platforms within a large distributed environment. It will give users increased flexibility in how they manage large distributed nets."

MAXM will also be increasing the number of users individual MAXM concentrators can support from 100 to 1,000. MAXM concentrators are the distributed elements of the MAXM platform that gather alarms and status messages from remote elements, filter out extraneous or redundant alerts and report that data back to the central MAXM platform.

The new concentrators will enable mangers to define larger numbers of users to the MAXM server. "We know we'll need the ability to grow beyond where we are now, and MAXM has promised us this capability," Faul said.

Hardy said MAXM is also working on building a trouble-ticketing application with one of its large customers, Cable & Wireless North America, Inc.

"The application will run on an RS/6000 and accept alerts and alarms from the MAXM server," said Steven Johnson, MAXM's product manager. Johnson said the application was in a prototype stage and declined to provide further details.

MAXM now works with trouble-ticketing systems from Remedy Corp. or IBM's Information Manager database, which is used to build trouble tickets.

MAXM will be porting its OS/2-based operator workstation software to AIX.

"We'd like to see them look at Windows too, but we need the Unix support for our government contracts," Faul said.

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Info Highway

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much attention as education and health in the NII debate.

The government has to do a better job of defining the vision of the NII, said Bud Huber, manager of strategic planning at Hughes Aircraft Co. Many users are wary of government intervention, Huber noted, adding, "There's a fear that vendors are using this as a way to tap the government for money."

The administration is prodding federal agencies to map out strategies for electronic commerce with the public sector as part of its NII initiative and is considering mandating standards for everything from automated health claims processing to electronic tax filing.

"The Clinton administration's direction [on the NII] is clear," said Mike Kaminski, manager of advanced development of manufacturing information systems at General Motors Corp. "But the method by which they're seeking to develop this is a puzzle," he said, referring to government spending for moving to the NII.

The government's primary spending vehicle for the NII, the High-Performance Computing and Communications Program (HPCC), is confusing. The HPCC throws $1 billion per year at 10 federal agencies to spend on a wide range of research and purchases (see graphic). The administration has proposed a 23% increase in HPCC funding for 1995.

KAMINSKI

But for companies following the action in government spending, the NII projects often seem uncoordinated or irrelevant to business.

"They should pave the way to make private industry put more seed money into this," Kaminski said. "We don't want to see a bureaucracy come out of this." But sometimes government funding hits targets familiar to the business world.

The Department of Defense, under the Technology Reinvestment Program, this month granted $70.7 million to a consortium led by IBM to develop National Industrial Information Infrastructure Protocols based on the Standards for Exchange of Product Model Data (STEP).

STEP's goal is to compile a complete, unambiguous computer-readable definition of physical and functional characteristics of products that make it easier for manufacturers to exchange information.

The question of the government mandating use of standards such as STEP is controversial. Half of those polled in the AEA survey thought the government should mandate standards, while half did not. Fred Hembrough, director of computer-aided design at Raytheon Corp., said government-mandated standards can work to the benefit of business. Hembrough is in charge of implementing the Defense Department's required Computer-aided Acquisition and Logistics Support standards for Raytheon.

Other White House NII proposals have come under question. Lance Ede, manager of communications at Electronic Data Systems Corp., said that while Vice President Al Gore's idea that schools, libraries and hospitals should have free access to the network is honorable, the cost of videoconferencing and interactive services isn't cheap.

Special tariffs for schools, libraries and hospitals may be the answer, Gore said. "Tariffing has the flexibility to apportion that between shareholders and ratepayers," he said. "I think it ought to be a mix."

Where the dollars will go

Breakdown of High-Performance Computing and Communications Program funds (in millions).

Agency	Fiscal year '93	Fiscal year '94
The Advanced Research Projects Agency, Department of Defense	$275.0	$343.0
National Science Foundation	225.2	341.0
Department of Energy	101.0	123.8
NASA	82.1	123.0
National Institutes of Health	46.5	71.1
National Security Agency, Department of Defense	43.6	41.7
National Oceanic and Atmospheric Administration, Department of Commmerce	9.8	12.4
Environmental Protection Agency	7.9	11.9
National Institute of Standards and Technology, Department of Commerce	2.1	26.1
Department of Education	2.0	2.0
Total	**795.2**	**1,096.0**

SOURCE: OFFICE OF SCIENCE AND TECHNOLOGY POLICY, WASHINGTON, D.C.

Alliance

Continued from page 8

The EDA/Gateway for ODS, which will reside on OS/2 or Windows NT servers, will give Windows clients using Microsoft's Open Database Connectivity or Sybase's DB/Lib technology access to various databases. The gateway will work with IBI's EDA/SQL host-based database access software.

The EDA/Gateway for Windows NT, which also runs on OS/2 and Windows NT servers, will allow Windows clients to access Microsoft's SNA Server, which in turn uses IBM's LU 6.2 networking protocol to access DB2 databases running on IBM MVS, VM and Application System/400 hosts. This product also works with EDA/SQL.

"[IBI's] alliance with Microsoft will allow EDA/SQL users to benefit from the broad base of connectivity solutions developed by both Microsoft and [IBI]," said John Senor, vice president of IBI's EDA division.

The new gateways will each be available in the second quarter for $5,000.

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UVA

Continued from page 1

proven, but there's just nothing else out there that gives us the bandwidth we need," said Eugene Sullivan, director of advanced technology at the Department of Neurosurgery here.

The hospital's effort highlights the complex types of applications ATM networks can be used to support even when other high-speed technologies, such as Fiber Distributed Data Interface, fall short.

FROM HERE TO ATM

The Department of Neurosurgery consists of several groups, each of which focuses on different applications. The Neuroclinical Trials Center, for example, conducts studies to determine drug safety, while the Neurovisualization Center has application developers who write programs to help neurosurgeons use technology to perform their jobs better. There are also administrative and accounting groups.

These groups' activities and 100 total employees are currently supported via a single Ethernet-based NetWare 3.11 local-area network. The LAN attaches to the university network through a Cisco Systems, Inc. router to gain access to the mainframe and outside services, such as the Internet.

The first ATM links installed will provide communications between the neurosurgery organization and other hospitals. According to Sullivan, the university last year participated in an ATM demonstration that linked its hospital to the Walter Reed Army Medical Center in Washington, D.C. and to an army field hospital at Fort Gordon, Ga. The connections were made over T-3 fiber-optic links.

The demo was designed to show the benefit of tele-medicine in military field hospitals when specialists are not available on site — the same basic application being deployed by the hospital.

The UVA hospital next month will cut over T-3-based ATM links from Sprint Corp. between itself and two nearby hospitals. Each location will install a Newbridge Networks, Inc. ATM switch — creating point-to-point ATM links — which will support workstations to be used by physicians. The links will enable a specialist at the university, for example, to consult with doctors and patients at other sites via two-way audio and video.

Perhaps more importantly, by using connections from the ATM switch to a workstation in the operating room, specialists would be able to oversee surgery going on at other sites and to make suggestions during operations.

Sullivan admitted the price for this implementation is steep — about $750,000 for the hardware and communications links. But he also said the benefits for patients and physicians offset that cost.

"This helps the patients at the community hospital, because they can stay within their environment with a doctor they're familiar with," he said. "It also helps the community hospitals keep patients local, rather than having to send them elsewhere to see specialists.

The next ATM implementation phase will be contained within the Neurosurgery Department, connecting the operating room and doctors' offices.

Currently, Dr. Neal Kassell can sit at a workstation in his department office and see live surgery in the department's operating room via a token-ring connection. If he needs to comment on the surgery, he picks up the phone and calls into the operating room. But sometimes, that is just not enough.

"I want to be able to do interactive consultation," Kassell said. He envisions an electronic white board, which would be displayed over the live-video of the surgery, on which he could make a mark that would appear on a workstation screen in the operating room.

"I want to white-board with the operating room and say, 'Cut here' or 'What is this?' " Kassell said.

To support ATM in-house, the department will establish direct links from a Newbridge ATM switch in the neurovisualization clinic to the operating room and to the doctors' offices. The offices and operating room will have ordinary workstations with Extended Industry Standard Architecture-based ATM cards connected to the network.

According to Will McClennan, an engineer within the neurovisualization center, the goal is to have the ATM switch handle the bulk of the processing, while the workstations will serve largely as terminals.

Implementing ATM is one thing; managing it will be another. Most vendors are currently pitching proprietary ATM management solutions, but UVA plans on using its Simple Network Management Protocol-based Hewlett-Packard Co. OpenView system to handle much of the management tasks.

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